Sun Blade™ X6270 Server Module Installation Guide

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Contents

Preface

This *Sun Blade X6270 Server Module Installation Guide* contains procedures for installing the server module into a chassis, connecting to the service processor, and configuring the preinstalled Solaris™ Operating System option or OpenSolaris Operating System, if ordered.

Product Updates

For product updates that you can download for the Sun Blade™ X6270 Server Module, please visit the following web site:

http://www.sun.com/download/

Find the Hardware Drivers section and click x64 Servers & Workstations. The Sun Blade X6270 Server Module site contains updates for firmware and drivers, as well as CD-ROM ISO images.

Related Documentation

The documents listed in the following table are available online at:

http://docs.sun.com/app/docs/prod/blade.x6270

At that site, search for the Sun Blade X6270 Server Module.

Title	Content	Part Number	Format
Sun Blade X6270 Server Module Product Notes	Late-breaking information about the server module	820-6179	PDF HTML
Sun Blade X6270 Server Module Getting Started Guide	Basic installation information for setting up the server module	820-6181	PDF Print
Sun Blade X6270 Server Module Installation Guide	Detailed installation information for setting up the server module	820-6175	PDF HTML Print option
Sun Blade X6270 Server Module Linux, VMware, and Solaris Operating Systems Installation Guide	Installation instructions for the Linux, VMware, and Solaris operating systems	820-6176	PDF HTML
Sun Blade X6270 Server Module Windows Operating System Installation Guide	Installation instructions for the Windows Server operating system	820-6177	PDF HTML
Sun Installation Assistant for Linux and Windows User's Guide	Instructions for using the Sun Installation Assistant (SIA) when installing a Windows or Linux operating system	820-3357	PDF HTML
Sun Blade X6270 Server Module Service Manual	Information and procedures for maintaining and upgrading the server module	820-6178	PDF HTML
x64 Servers Utilities Reference Manual	Information for using applications and utilities common to x64 servers and server modules	820-1120	PDF HTML
Sun x64 Servers Diagnostics Guide	Information about how to use the diagnostic software tools provided with x64 servers	820-6750	PDF HTML
Sun Integrated Lights Out Manager 3.0 Documentation Collection	These documents cover ILOM features and tasks that are common to servers and server modules that support ILOM 3.0.	820-5523 820-6410 820-6411 820-6412 820-6413	PDF HTML

Title	Content	Part Number	Format
Sun Integrated Lights Out Manager 2.0 User's Guide	ILOM features and tasks that are common to servers and server modules that support ILOM 2.0	820-1188	PDF HTML
Sun Integrated Lights Out Manager (ILOM) Supplement for Sun Blade X6270 Server Module	ILOM information that is specific to the server module	820-6180	PDF HTML
Important Safety Information for Sun Hardware Systems	Multilingual hardware safety and compliance information for all Sun hardware systems	816-7190	Print

Translated versions of some of these documents are available at the web site described above in French, Simplified Chinese, and Japanese. English documentation is revised more frequently and might be more up-to-date than the translated documentation.

Documentation, Support, and Training

Sun Function	URL
Sun Documentation	http://docs.sun.com
Support	http://www.sun.com/support/
Training	http://www.sun.com/training/

Typographic Conventions

Typeface[*]	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
AaBbCc123	What you type, when contrasted with on-screen computer output	`% `**`su`** `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this. To delete a file, type `rm` *filename*.

* The settings on your browser might differ from these settings.

Using UNIX Commands

This document might not contain information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris Operating System documentation, which is at:

  http://docs.sun.com

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Sun is interested in improving its documentation and welcomes your comments and suggestions. You can submit your comments by going to:

http://www.sun.com/hwdocs/feedback

Please include the title and part number of your document with your feedback:

Sun Blade™ X6270 Server Module Installation Guide, part number 820-6175-11

Preparing to Install the Sun Blade X6270 Server Module

This chapter contains the following topics:

About Your Server Module Shipment

Standard configurations for the Sun Blade X6270 Server Module are assembled at the factory and shipped ready for installation in a Sun Blade 6000 or 6048 Series Chassis. Optional server module components that you purchase independent of the standard configuration are shipped separately and, in most cases, should be installed prior to installing the server module into the chassis.

A summary of the standard configurations and optional components available for the Sun Blade X6270 Server Module follows in TABLE 1-1.

TABLE 1-1   Sun Blade X6270 Server Module Configurations and Options

X6270 Server Module	Description
Standard Server Components	The following standard components are shipped on the Sun Blade X6270 Server Module: • Service Processor (SP) – One SP per server. SP provides remote keyboard, mouse, and video functionality, IPMI baseboard management controller (BMC) functionality, and interfaces to the chassis monitoring module (CMM). The SPs and CMM work together to form a complete server module and chassis management system. • Indicators and Buttons – The Sun Blade X6270 Server Module includes standard service indicator LEDs and buttons. • Flexible I/O Network Connectivity – Supported I/O network connectivity can include these optional components: fabric expansion module, chassis network express modules, and chassis PCI express modules. • Front Panel I/O Device Connection – The Sun Blade X6270 Server Module front panel provides a universal connection port for attaching devices directly to the server using a dongle cable.
Preinstalled Memory and CPU Configurations	Servers are typically ordered and shipped with preinstalled memory and CPU configurations. Some of the preinstalled memory and CPU assemblies offered (and shipped) for the Sun Blade X6270 Server Module can include: • 2 Xeon Quad-Core E5520 CPU – 2.26GHz, Turbo, 80W • 4GB Memory – 2x 2GB DDR3 1066MHz DIMMs *or* • 2 Xeon Quad-Core E5540 CPU – 2.53GHz, Turbo, 80W • 12GB Memory – 6 x 2GB DDR3 1066MHz DIMMs *or* • 2 Xeon Quad-Core X5570 CPU –2.93GHz, Turbo, 95W • 24GB Memory – 6 x 4GB DDR3 1333MHz DIMMs
Optional Components	The following optional server module components can be ordered and shipped separately: • CPU assembly options • DDR3 memory kits • Compact flash option • SATA and SAS storage drives • Dongle cable option • Fabric Expansion Module (FEM) options • RAID Expansion Module (REM) options • Operating system software • Printed documentation - Sun Blade X6270 Server Module Installation Guide.

Server Module Specifications

Physical Specifications

The Sun Blade X6270 Server Module is designed to be installed in a Sun Blade 6000 or 6048 Modular System chassis. For additional specifications regarding the Sun Blade 6000 or 6048 Modular System, refer to the chassis documentation.

TABLE 1-2 gives the physical specifications for the Sun Blade X6270 Server Module.

TABLE 1-2   Sun Blade X6270 Server Module Physical Specifications

	English	Metric
Height	12.87 inches	327 mm
Width	1.7 inches	44 mm
Depth	20.16 inches	512 mm
Weight	17 pounds	7.71 kg

Electrical Specifications

The Sun Blade X6270 Server Module is 12.9 x 20.1 x 1.7 inches in a 1U form factor. The server module connects to a Sun Blade Modular System, or *chassis*, which provides 12V main power to each module, as well as cooling through fans. In addition to the 12V main power, the chassis provides 3.3V AUX power to each server module to power the local FRU ID EEPROM. This 3.3V AUX power enables the chassis monitoring module (CMM) to query each server module slot prior to 12V main power and 12V fan power application to validate that there is sufficient power and cooling to support the server modules installed in the chassis.

Environmental Requirements

TABLE 1-3 gives the environmental requirements for the Sun Blade X6270 Server Module.

TABLE 1-3   Sun Blade X6270 Server Module Environmental Requirements

Condition	Requirement
Operating temperature	5 ºC to 35 ºC noncondensing
Nonoperating temperature	-40 ºC to 65 ºC
Operating humidity	10% to 90% noncondensing (27 ºC max. wet bulb)
Nonoperating humidity	93% noncondensing (38 ºC max. wet bulb)
Operating altitude	3048 meters at 35 ºC
Nonoperating altitude	12,000 meters

Server Module Installation Task Checklist

TABLE 1-4 summarizes an ordered list of tasks that you must perform to properly install the server module into a Sun Blade 6000 or 6048 Series Modular System.

TABLE 1-4   Installation Task Checklist

Step	Task Description	For Instructions, See:
1	Unpack the Sun Blade X6270 Server Module and any optional components ordered for the server from the shipping containers.	• Chapter 1 "About Your Server Module Shipment" on page 1
2	If applicable, install the optional server module components prior to installing the server module into the chassis.	• Chapter 2 "Install Server Module Optional Components" on page 7
3	Install the server module into a powered-on Sun Blade 6000 or 6048 Series Chassis.	• Chapter 3 "Installing and Powering On the Sun Blade X6270 Server Module" on page 33
4	Verify the power state of the server module and apply main power to the server module SP and host.	• Chapter 3 "Installing and Powering On the Sun Blade X6270 Server Module" on page 33

TABLE 1-4   Installation Task Checklist *(Continued)*

Step	Task Description	For Instructions, See:
5	Connect a management station to configure an IP address.	• Chapter 3 "Installing and Powering On the Sun Blade X6270 Server Module" on page 33 • Chapter 4 "Setting Up ILOM" on page 45
6	If ordered, configure the factory-installed Solaris Operating System or OpenSolaris operating System image shipped on the SAS or SATA storage drive.	• Chapter 5 "Configuring the Preinstalled Solaris 10 Operating System" on page 53 • Chapter 6 "Configuring the Preinstalled OpenSolaris Operating System" on page 69
	If applicable, install one of the following operating systems: • Red Hat Linux Enterprise 5 • SUSE Linux Enterprise Server 10 • Solaris 10 Operating System • OpenSolaris Operating System • VMWare	• *Sun Blade X6270 Server Module Linux, VMware, Solaris, and OpenSolaris Operating System Installation Guide (820-6176)*
	• Microsoft Windows Server 2003 or 2008 Operating System	• *Sun Blade X6270 Server Module Windows Operating System Installation Guide (820-6177)*

Commonly Used Terms

The following table identifies some of the terms commonly used in this guide to describe the installation process of a server module in a Sun Blade 6000 or 6048 Series Chassis.

TABLE 1-5 Commonly Used Terms

Term	Definition
Server Module	Blade server hardware.
Chassis	Sun Blade 6000 or 6048 Modular System hardware. For additional information about these chassis systems, see the documentation for Sun Blade 6000 or 6048 Series Chassis at: http://docs.sun.com/app/docs/prod/blade.srvr#hic
CMM	Chassis monitoring module (CMM) hardware.
SP	Embedded service processor (SP) on server module and CMM.
ILOM	Sun Integrated Lights Out Manager (ILOM) is the embedded management software on the server module SP and CMM SP that enables you to manage your system. For additional information about ILOM, refer to *Sun Integrated Lights Out Manager 2.0 User's Guide* or the *Sun Integrated Lights Out Manager 3.0 Documentation Collection*.

Install Server Module Optional Components

This chapter describes how to install the following customer-installable options on the Sun Blade X6270 Server Module:

- Memory modules
- CPU module
- Compact Flash module

- Fabric expansion module (FEM)
- RAID expansion module (REM) and battery
- Hard disk or solid state storage drives

Caution – The installation procedures in this chapter assume that the server module has not yet been installed and powered-on in the system chassis. For information about replacing or adding options on a server module that is installed in the system chassis and powered-on, see the service procedures in the *Sun Blade X6270 Server Module Service Manual*.

This chapter contains the following topics:

Locations of Server Module Optional Components

shows the locations of the Sun Blade X6270 Server Module optional components that are documented in this chapter.

FIGURE 2-1 Sun Blade X6270 Server Module Option Locations
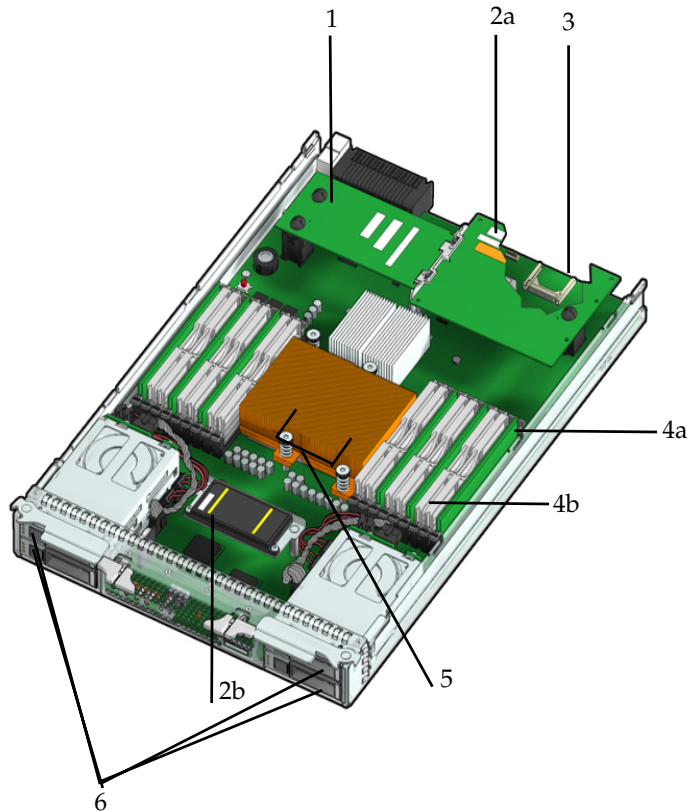
Figure Legend Server Module Optional Componets

1	Fabric expansion module (FEM)
2a	Raid expansion module (REM)
2b	REM battery

3	Compact Flash module

The Compact Flash module is shown in FIGURE 2-1 under the REM.

4a	DIMMs

The DIMMs in FIGURE 2-1 are shown populated in DIMM slots 2, 5, 8 for each CPU.

Note - Processor chip contains memory controller. Do not attempt to populate DIMMs sockets next to unpopulated (empty) CPU sockets.

4b	DIMM filler panels

DIMM filler panels are shown populated in DIMM slots 0, 1, 3, 4, 6 and 7.

The DIMM filler panels should remain in unpopulated DIMM slots until the DIMM filler panel can be replaced with a DIMM. Otherwise, you might experience a reduction in system performance.

5	CPU heatsinks (up to two CPUs can be installed)

The minimum CPU configuration shipped includes one CPU with a heatsink. An air baffle is shipped to cover the empty CPU socket (not shown in FIGURE 2-1). Additional CPUs can be ordered.

In the example shown in FIGURE 2-1, the CPUs are installed under the two heatsinks

6	Storage drives (hard disk drives or solid state drives) (up to 4 drives may be populated)

Note – Server module options and their part numbers are subject to change over time. For the most up-to-date list of components for the Sun Blade X6270 Server Module, click on the X6270 Server Module product page at:
http://sunsolve.sun.com/handbook_pub/Systems/

Before You Begin

This section describes common information and procedures that apply to the installation of all server module options. Prior to installing a server module option, you should consult these sections:

- "Tools and Supplies Needed" on page 10
- "Removing or Installing Server Module Cover" on page 11
- "Removing or Replacing Filler Panels" on page 12

Tools and Supplies Needed

Prior to adding optional components to the server module, you should obtain the following items:

- Antistatic surface and wrist strap.

    To prevent static damage whenever you are accessing any of the internal components, you must:

    - Place static sensitive components on an antistatic surface. The following items can be used as an antistatic surface:

        - The bag used to ship the component.
        - Sun Electrostatic Discharge (ESD) mat, Sun part number 250-1088
    - Use an antistatic wrist strap.

        Attach the antistatic wrist strap to your wrist and ground the other end of the strap to the system chassis (sheet metal). For additional information, see the instructions that are shipped with the strap.

⚠ **Caution –** Internal modules and options are electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or work environment can destroy components.

- Allen wrench (4mm) is required for CPU installation procedure.
- No. 2 Phillips screwdriver is required for REM battery procedure.

Removing or Installing Server Module Cover

As needed, consult the following procedures when removing or installing the server module cover.

- "Remove Cover From Server" on page 11
- "Install Cover on Server" on page 11

▼ Remove Cover From Server

1. **Press down on the cover release button and, using the indent for leverage, slide the main cover toward the rear of the chassis approximately 0.5 inch (12 mm). See** FIGURE 2-2**.**

FIGURE 2-2   Removing the Main Cover
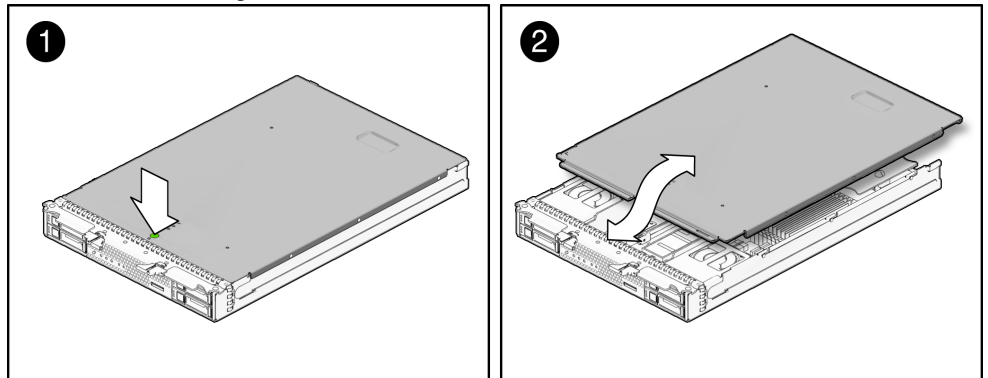
2. **Grasp the cover by its rear edge and lift it straight up from the chassis.**

▼ Install Cover on Server

1. **Slide the cover under the tabs at the front of the server module.**

2. **Gently press down on the cover to engage it with the chassis.**

3. **When applicable, install the server in the chassis and power on the system.**

   For instructions, see "Powering On the Server Module" on page 38.

Removing or Replacing Filler Panels

Each server module arrives with module-replacement filler panels for CPUs, storage drives, and memory modules. These filler panels are installed at the factory and must remain in the server until you are ready to replace them with a purchased module.

A filler panel is a metal or plastic enclosure that does not contain any functioning system hardware or cable connectors. These panels must remain in any unused module slots (storage drives, DIMMs, servers, and CPUs) to ensure proper air flow throughout the system. If you remove a filler panel and continue to operate your system with an empty module slot, the operating performance for your system could decline.

▼ Remove or Insert Filler Panels

To remove or insert server module filler panels follow the procedures in TABLE 2-1.

TABLE 2-1   Filler Panel Replacement Procedures

Filler Panel Module	Remove Procedure	Install Procedure
Server Module	1. Locate the server module filler panel to be removed from the chassis. 2. To unlatch the server module filler panel from the chassis, press the button on the release lever handle, then lower the lever into the fully open position. 3. To remove the filler panel from the chassis, hold the release lever then gently slide the filler panel toward you.	1. Locate the vacant server module slot in the chassis. 2. Ensure that the release lever is fully opened, then align the filler panel with the vacant server module slot. 3. Slide the filler panel into the vacant server module slot. As the release lever makes contact with the chassis, the lever will start to rise. 4. Close the release lever until it locks the filler panel in place.
Memory Module	1. Locate the memory module filler panel to be removed from the motherboard. 2. Simultaneously press down on both ejector levers at the ends of the memory module slot. 3. Lift the filler panel straight up to remove it from the memory module socket.	1. Locate the vacant memory module slot on the motherboard. 2. Ensure that ejector levers at both ends of the memory module slot are in a fully opened position. 3. Align the memory module filler panel with with the empty slot, then gently press the filler panel into slot until both ejector levers close, locking the filler panel in place.

TABLE 2-1 Filler Panel Replacement Procedures *(Continued)*

Filler Panel Module	Remove Procedure	Install Procedure
Storage Drive Module* *Hard disk drive or solid state drive	1. Locate the disk drive filler panel to be removed from the server. 2. To unlatch the disk drive filler panel, press the release lever button then tilt the lever up into the fully opened position. 3. To remove the filler panel from the slot, hold the opened release lever and gently slide the filler panel toward you.	1. Locate the vacant disk drive module slot in the server, then ensure that the release lever on the filler panel is fully opened. 2. Slide the filler panel into the vacant slot by pressing the middle of the filler panel faceplate with your thumb or finger. The release lever will rise as it makes contact with the chassis. Do not slide the filler panel in all the way. Leave the filler panel out approximately 0.25 to 0.50 inch (6 to 12 mm) from the opening. 3. Using your thumb or finger, press on the middle of the filler panel faceplate until the release lever engages with the chassis. 4. Close the release lever until it clicks into place and is flush with the front of the server.
CPU Air Baffle (over empty CPU socket)	1. Use an Allen wrench (4mm) to loosen the two mounting screws. 2. Gently pull up the air baffle to expose the empty CPU socket.	1. Lower the air baffle over the CPU socket, and align the holes for the mounting screws on the motherboard. 2. Insert the two mounting screws, then use an Allen wrench (4mm) to tighten the screws.

Note – For instructions for adding or replacing chassis component filler panels (for example, network modules or chassis monitoring modules), consult the documentation supplied with your chassis.

Server Module Optional Components Installation Procedures

The Sun Blade X6270 Server Module is shipped with a standard configuration. The optional components ordered for the Sun Blade X6270 Server Module are shipped separately and can be installed by the customer, with the exception of the CPU option. The CPU option should be installed by a qualified Sun service technician.

⚠ **Caution –** The server module options installation procedures in this chapter assume that the server module has not yet been installed or powered-on in the system chassis. For information about replacing or adding options on a server module that is installed in the system chassis and powered-on, see the *Sun Blade X6270 Server Module Service Manual*.

When installing server module optional components, refer to the following procedures:

- "Adding Memory Modules" on page 14
- "Adding a CPU Module" on page 19
- "Adding a CompactFlash Module" on page 22
- "Adding a RAID Expansion Module" on page 23
- "Adding a Fabric Expansion Module" on page 27
- "Adding a Hard Disk Drive or Solid State Drive" on page 29

Adding Memory Modules

The Sun Blade X6270 Server Modules are shipped with standard memory configurations. If you ordered additional memory, a kit for the additional memory is shipped separately.

Refer to the following information when adding memory modules to the X6270 Server Module:

- "Memory Module Installation Considerations" on page 15
  - "DIMM and CPU Physical Layout" on page 15
  - "DIMM Population Rules" on page 16
  - "DIMM Rank Classification Labels" on page 17
- "Install DIMMs" on page 18

Memory Module Installation Considerations

The Sun Blade X6270 Server Module supports a variety of DIMM configurations that can include single-rank (SR) DIMMs, dual-rank (DR) DIMMs, or quad-rank (QR) DIMMs. When adding additional memory modules to the Sun Blade X6270 Server Module, you should consider the following:

■ Physical layout of the DIMMs and CPUs.

  For details, see "DIMM and CPU Physical Layout" on page 15.

■ DIMM population rules.

  For details, see "DIMM Population Rules" on page 16.

DIMM and CPU Physical Layout

The physical layout of the DIMMs and CPUs on a Sun Blade X6270 Server Module is shown in FIGURE 2-3.

FIGURE 2-3   CPU and DIMM Physical Layout
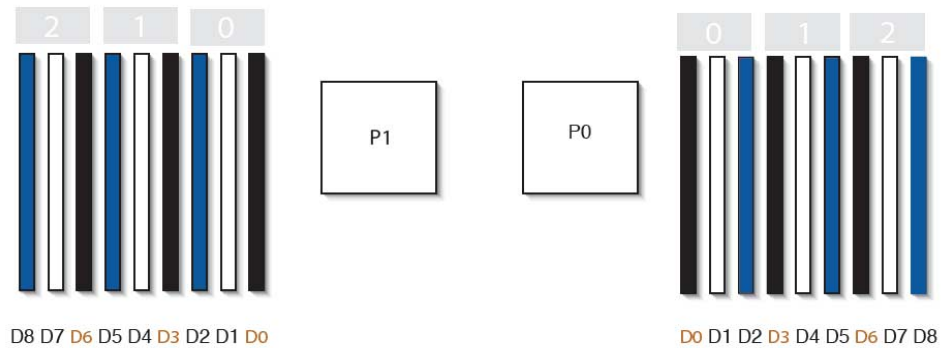
Figure Legend CPU and DIMM Layout

CPU 0 location	
	P0
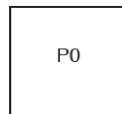
Figure Legend CPU and DIMM Layout

CPU 1 location

P1
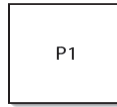
Channel locations for CPU 0

Three channels per CPU with each channel containing three color-coded DIMM slots (black, white, and blue)

0   1   2

Channel locations for CPU 1

Three channels per CPU with each channel containing three color-coded DIMM slots (blue, white and black).

2   1   0

DIMM slot numbering per CPU; with D8 as the farthest slot away from CPU

P0:

D0 D1 D2 D3 D4 D5 D6 D7 D8

P1:

D8 D7 D6 D5 D4 D3 D2 D1 D0
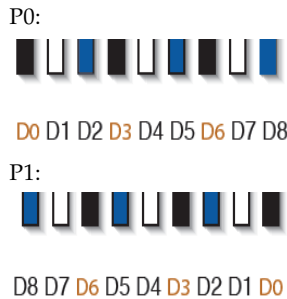
DIMM Population Rules

The DIMM population rules for the Sun Blade X6270 Server Module are as follows:

1. Do not populate any DIMM socket next to an empty CPU socket. Each processor contains a separate memory controller.

2. Each CPU can support a maximum of:

   - Nine dual-rank (DR) or single-rank (SR) DIMMs; *or*

   - Six quad-rank (QR) DIMMs with two per memory channel; *or*

   - Three QR DIMMs with one per channel and three DR or SR DIMMs.

3. Populate DIMMs by location according to the following rules:

- Populate the DIMM slots for each memory channel that are the farthest from the CPU first.

  For example, populate D8/D5/D2 first; then D7/D4/D1 second; and finally, D6/D3/D0. See FIGURE 2-3.

- Populate QR DIMMs first, followed by SR or DR DIMMs.

  - Populate QR DIMMs in blue sockets (D8/D5/D2) first then white sockets (D7/D4/D1). See FIGURE 2-3.

    Note that QR DIMMs are supported only in white sockets if adjacent blue socket contains a QR DIMM.

4. For maximum performance, apply the following rules:

   - The best performance is ensured by preserving symmetry. For example, adding 3x of same kind DIMMs, one per memory channel, and ensuring that both CPUs have the same size of DIMMs populated in the same manner.

   - In certain configurations, DIMMs will run slower than their individual maximum speed. See TABLE 2-2 for further details.

TABLE 2-2   DIMM Speed Considerations

1	DIMMs are available in two speeds: 1066 MHz and 1333 MHz.
2	DIMM speed rules are as follows: ■ 3x DIMM per channel = 800 ■ 2x DIMM per channel = 1333 MHz (for single-rank and dual-rank DIMM *or* = 800 MHz (for quad-rank DIMMs) ■ 1x DIMM per channel = 1333 MHz (if using 1333 MHz DIMMs[1]) ■ 1x DIMM per channel = 1066 MHz (if using 1066 MHz DIMMs)
3	The system operates all memory only as fast as the slowest DIMM configuration.

[1] This DIMM configuration requires CPUs supporting 1333 MHZ.

DIMM Rank Classification Labels

DIMMs come in a variety of ranks: single, dual, or quad. Each DIMM is shipped with a label identifying its rank classification.

TABLE 2-3 identifies the corresponding rank classification label shipped with each DIMM.

TABLE 2-3   DIMM Classification Labels

Rank Classification	Label
Quad-rank DIMM	4Rx4
Dual-rank DIMM	2Rx4
Single-rank DIMM	1Rx4

▼ Install DIMMs

1. **Remove the cover from the server.**

   See "Remove Cover From Server" on page 11.

2. **Remove the DIMM filler panel.**

   See "Remove or Insert Filler Panels" on page 12.

3. **To install a DIMM, do the following:**

   a. **Determine the DIMM socket location to populate.**

      See "DIMM Population Rules" on page 16.

   b. **Ensure that the DIMM ejector levers are open (angled outward).**

      See ejector lever position in FIGURE 2-4.

   c. **Align the DIMM notch to the DIMM connector key.**

   d. **Using both thumbs, press the DIMM straight down into the DIMM connector slot until both ejector levers close, locking the DIMM in the socket.**

Note – The DIMM must be inserted evenly, straight down into the DIMM connector slot, until the ejector levers lock into place.

FIGURE 2-4   DIMM Socket Release and Alignment
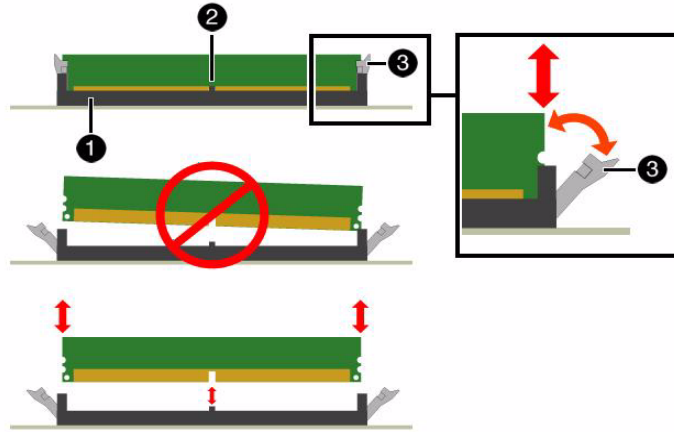
Figure Legend DIMM Socket Release and Alignment

1	DIMM connector slot
2	DIMM connector key
3	DIMM ejector lever

    e. Verify that the DIMM ejector levers are upright, seated, and tight. Press on ejector levers to ensure that they are engaged properly.

4. Install the cover on the server.

See "Install Cover on Server" on page 11.

Adding a CPU Module

The Sun Blade X6270 Server Module is shipped with a preinstalled CPU configuration. If you ordered an alternative CPU assembly option, the optional CPU assembly is shipped separately.

The CPU assembly option contains a CPU chip and a heatsink with preapplied thermal grease. CPU assembly options should only be installed by a Sun qualified service technician.

Refer to the following procedure when adding a CPU to the Sun Blade X6270 Server Module.

▼ Install the CPU

⚠ **Caution –** CPU options should be installed only by a Sun qualified service technician.

1. **Prepare the server for service.**

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

   b. **Slide the server out of the rack.**

   c. **Attach an antistatic wrist strap.**

   d. **Remove the top cover.**

      See "Remove Cover From Server" on page 11.

2. **Unpack the CPU kit.**

   The kit includes a CPU chip and a heatsink with the thermal grease preapplied.

3. **Install the CPU (FIGURE 2-5).**

   a. **Properly orient the CPU with the socket alignment tabs and carefully place the CPU into the socket [1].**

      Ensure that the orientation is correct as damage might result if the CPU pins are not aligned correctly.

FIGURE 2-5 Installing the CPU
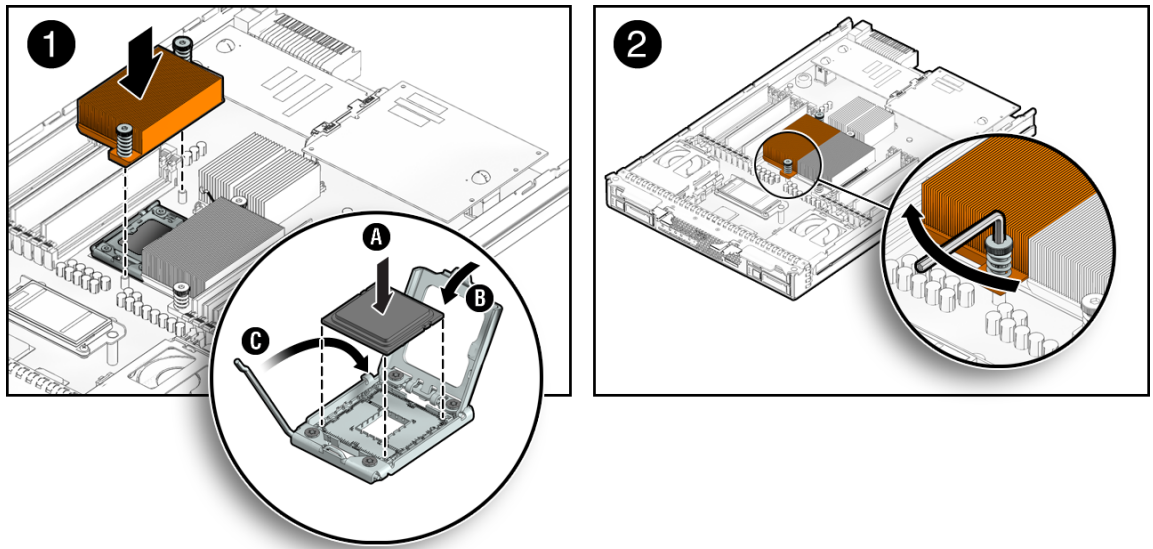
b. **Lower the pressure frame.**

   Ensure that the pressure frame sits flat around the periphery of the CPU.

c. **Engage the release lever by rotating it downward and slipping it under the catch [1 inset].**

d. **Orient the heatsink so that the two screws line up with the mounting studs [1].**

Caution – When handling the heatsink, be careful not get the thermal grease on your fingers so as not to transfer the grease to other server components. To do so could cause component contamination and/or damage.

e. **Carefully position the heatsink on the CPU, aligning it with the mounting posts to reduce movement after it makes initial contact with the layer of thermal grease [2].**

Caution – If the heatsink assembly is moved too much during its installation, the layer of thermal grease might not be distributed evenly, leading to component damage.

f. **Tighten the screws alternately one-half turn until fully seated.**

4. **Return the server to operation.**

a. **Install the top cover.**

See "Install Cover on Server" on page 11.

b. **Install the server into the rack.**

See "Installing and Powering On the Sun Blade X6270 Server Module" on page 33.

c. **Reconnect the power cord (or cords) to the power supply (or supplies) and power on the server.**

See "Installing and Powering On the Sun Blade X6270 Server Module" on page 33.

Verify that the AC Present LED is lit.

Adding a CompactFlash Module

The Sun Blade X6270 Server Module is not shipped with the compact flash module option installed. This option must be ordered and is shipped separately for customer installation.

Refer to the following procedure when adding a compact flash module option to the Sun Blade X6270 Server Module.

▼ Install CompactFlash Module

1. **Remove the cover from the server.**

See "Remove Cover From Server" on page 11.

2. **Locate the CompactFlash module slot on the motherboard.**

Note – If a RAID expansion module (REM) is installed, the CompactFlash slot is located underneath the REM board.

For CompactFlash location on motherboard, see "Sun Blade X6270 Server Module Option Locations" on page 8.

3. **To install the CompactFlash module, do the following:**

a. **Locate the keys on the side of the compact flash card and align them with the sides of the CompactFlash slot.**

See FIGURE 2-6.

b. **Slide the compact flash card into the slot until it locks into place.**

FIGURE 2-6   Inserting CompactFlash Module
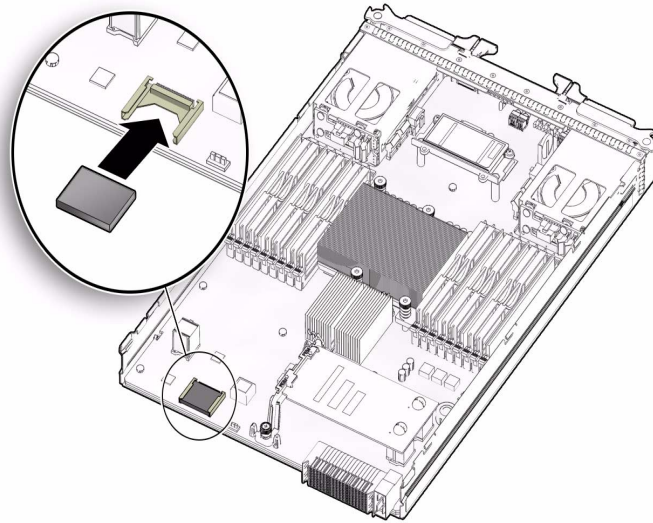
4. **Install the server cover.**

   See "Install Cover on Server" on page 11.

Adding a RAID Expansion Module

The RAID expansion module (REM), if ordered, might not arrive installed on the Sun Blade X6270 Server Module. In some cases, this option is shipped separately for customer installation.

The RAID expansion module (REM) enables the RAID functionality for SAS HDDs. The Sun Blade X6270 supports RAID 0, 1, 5 and 6.

You can populate the Sun Blade X6270 Server Module either with the REM model 4620A, which uses a backup battery to store the system configuration, or the REM model 4607A, which does *not* use a backup battery.

Note that when adding a REM to a server, you must install one or more SAS or SATA storage drives (hard disk or solid state drive) in the server disk slots 0 through 3. For further information about the implementation and configuration of RAID on this server, consult the following disk controller documentation:

■ *Sun Disk Management For x64 Sun Fire and Sun Blade Series Servers Overview Guide* (820-6350)

■ *Sun StorageTek RAID Manager Software Release Notes* (820-2755)

- *Sun Intel Adaptec BIOS RAID Utility User's Manual* (820-4708)
- *Uniform Command-Line Interface User's Guide* (820-2145)
- *Sun LSI 106x RAID User's Guide* (820-4933)

To install the REM option on the Sun Blade X6270 Server Module motherboard, refer to the following procedure(s):

- "Install REM Option 4620A or 4607A" on page 24
- "Install Backup Battery for REM Option 4620A" on page 26

▼ Install REM Option 4620A or 4607A

1. **Remove the cover from the server.**

   See "Remove Cover From Server" on page 11.

2. **Locate the REM support bracket on the motherboard, then remove the protective shipping cap(s) from the REM connector(s).**

   For REM location on motherboard, see "Sun Blade X6270 Server Module Option Locations" on page 8.

3. **Slide the REM board at an angle into the support bracket, then press the module carefully into the connector.**

FIGURE 2-7   Installing REM
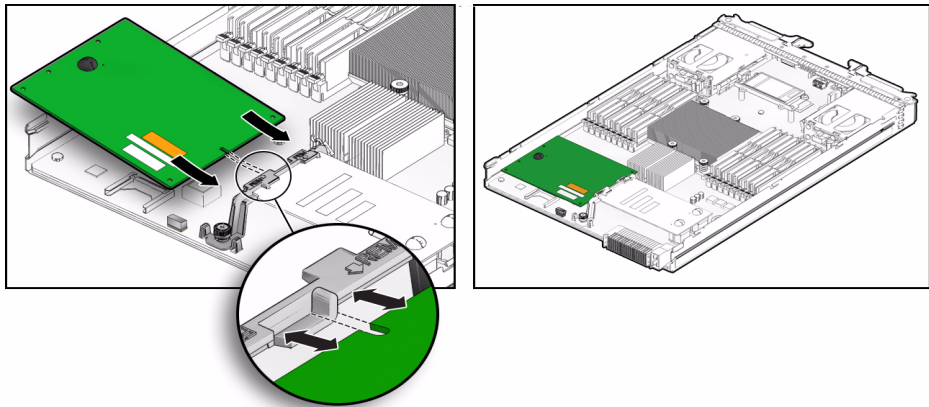
4. **If you are installing the REM 4620A board that uses a backup battery, do the following:**

a. **Connect the jumper cable between the REM board and motherboard.**

b. **Install the REM battery.**

   See "Install Backup Battery for REM Option 4620A" on page 26.
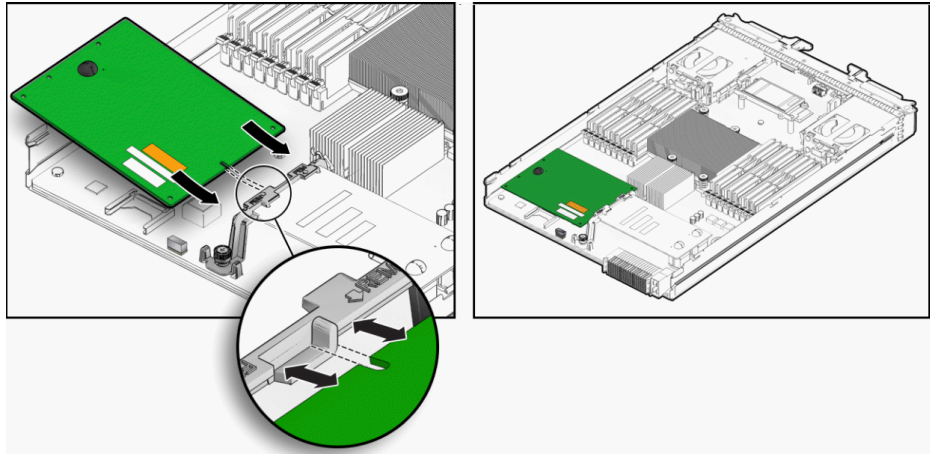
5. **Install the cover on the server.**

   See "Install Cover on Server" on page 11.

▼ Install Backup Battery for REM Option 4620A

1. **Locate the REM battery connectors on the motherboard.**

   For REM battery location on motherboard, see "Sun Blade X6270 Server Module Option Locations" on page 8.

2. **To install the REM battery on the motherboard, do the following:**

   a. **Align the battery over the standoff connectors.**

   b. **Insert and tighten the four screws to secure the REM battery to the motherboard.**

   c. **Connect the battery cable to the motherboard.**

FIGURE 2-9   Connecting REM Battery Cable
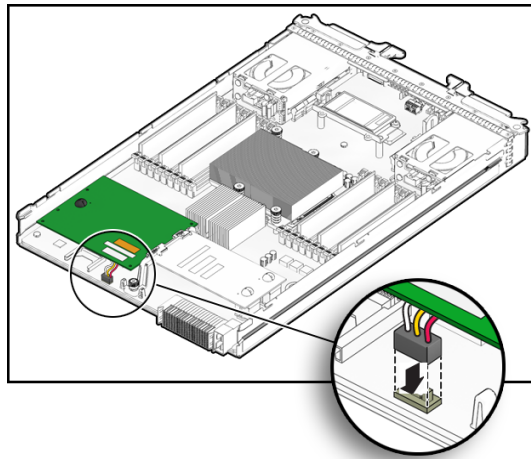
   3. **Install the cover on the server.**

      See "Install Cover on Server" on page 11.

Adding a Fabric Expansion Module

The Sun Blade X6270 Server Module is not shipped with the fabric expansion module (FEM) option installed. This option must be ordered and is shipped separately for customer installation.

Refer to the following procedure when adding a fabric expansion module (FEM) to the Sun Blade X6270 Server Module.

▼ Install FEM

   1. **Remove the cover from the server.**

      See "Remove Cover From Server" on page 11.

   2. **Locate the FEM board connectors on the mother board then remove the protective shipping caps from the connectors.**

      For FEM location on motherboard, see "Sun Blade X6270 Server Module Option Locations" on page 8.

   3. **To install the FEM board, do the following:**

a. **Slide the FEM board at an angle into the support bracket.**

b. **Press the FEM board carefully into the connector.**

See FIGURE 2-10.

FIGURE 2-10 Inserting a FEM Board
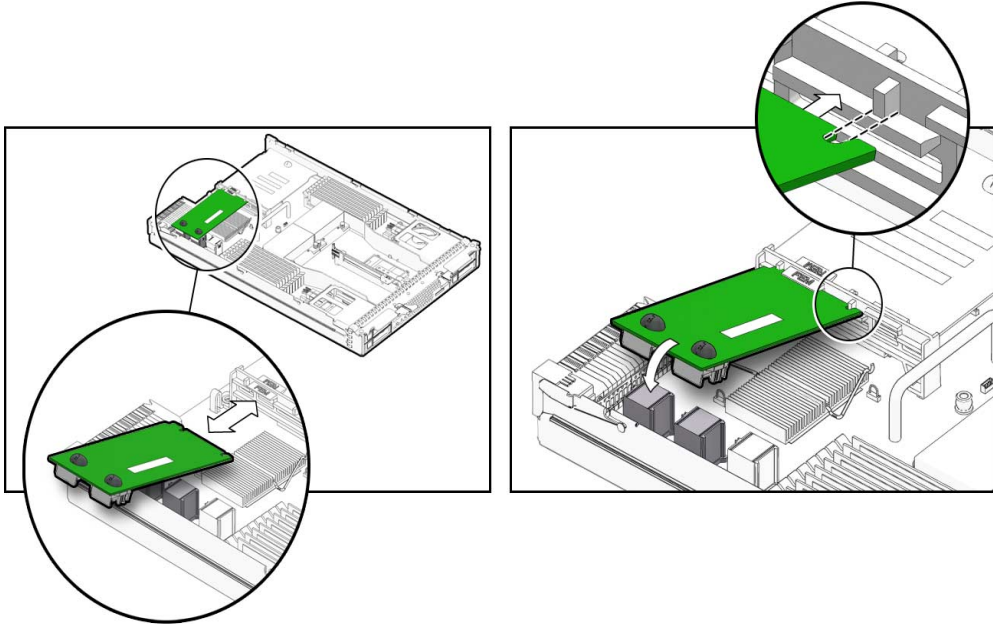
4. **Install the cover on the server.**

For details, see "Install Cover on Server" on page 11.

Adding a Hard Disk Drive or Solid State Drive

The hard disk drives (HDDs) or solid state drives (SSDs), if ordered, might not arrive installed on the Sun Blade X6270 Server Module. In some cases, this option is shipped separately for customer installation.

When installing a hard disk drive or solid state drive in the Sun Blade X6270 Server Module, refer to following sections:

- "Internal System Software Designation for Drives" on page 29
- "Add a Drive" on page 30

Internal System Software Designation for Drives

The internal system software designation for drives is shown in FIGURE 2-11.

FIGURE 2-11 Designation of Storage Drives
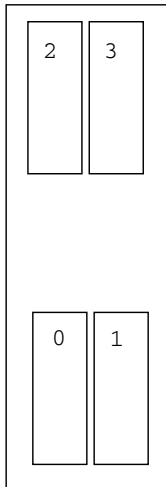
▼ Add a Drive

1. Locate and remove the drive filler panels from the server module bays.

For drive locations on the server, see "Sun Blade X6270 Server Module Option Locations" on page 8.

For instructions to remove drive filler panels, see "Remove or Insert Filler Panels" on page 12.

2. Ensure that the release lever on the drive is in a fully opened position.

3. Slide the drive into the vacant slot by pressing the middle of the drive faceplate with your thumb or finger.

The release lever will rise as it makes contact with the chassis.

Do not slide the drive in all the way. Leave the drive out approximately 0.25 to 0.50 inch (6 to 12 mm) from the opening.

For example:

- If adding a drive to a server module and the server module has not been installed in the system chassis, see FIGURE 2-12.

or

- If adding a drive to a server module and the server module is installed in the system chassis, see FIGURE 2-13.

FIGURE 2-12 Add Drive - Server Not Installed in Chassis.
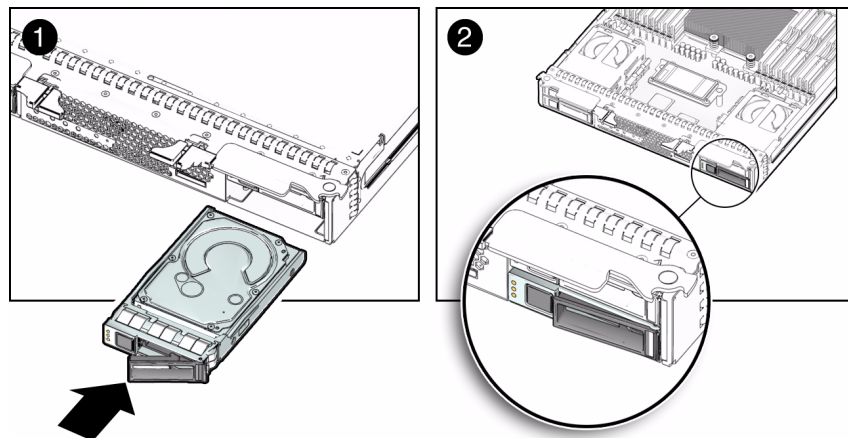
FIGURE 2-13 Add Drive - Server Installed in Chassis
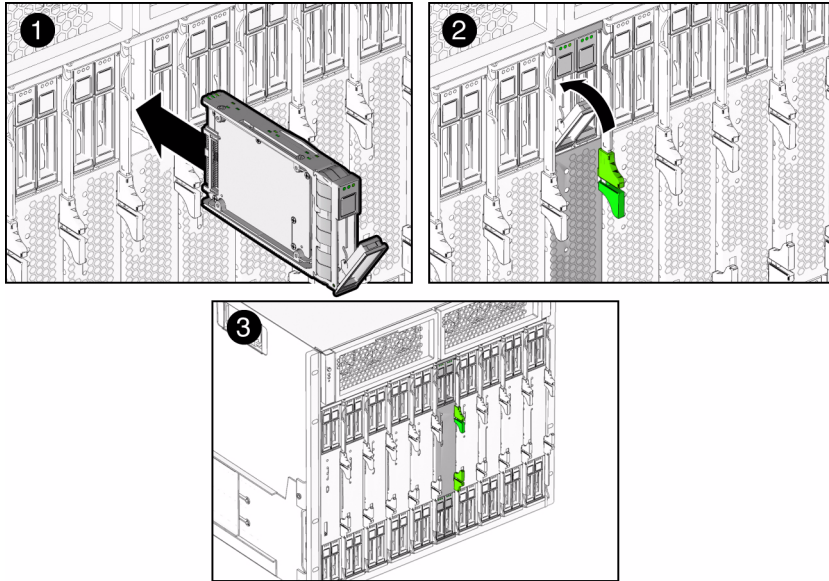
4. **Using your thumb or finger, press on the middle of the drive's faceplate until the release lever engages with the chassis.**

5. **Close the release lever until it clicks into place and is flush with the front of the server.**

Installing and Powering On the Sun Blade X6270 Server Module

This chapter contains the following topics:

Installing the Server Module Into the Chassis

Consult the following sections when installing a server module into a powered on chassis:

- "Before You Begin" on page 34
- "Install Server Module Into a Powered-On Chassis" on page 35

Before You Begin

Prior to installing the server module into a powered-on chassis, ensure that the following requirements are met.

- Ensure that the following chassis components are installed and powered-on in the Sun Blade 6000 or 6048 Series Chassis.
  - Chassis monitoring module (CMM).
  - Network express modules (NEMs)
  - All required cabling to the chassis are attached.
  - The system chassis is powered-on.

  For information about installing chassis components, attaching cables, and powering on the chassis, see the Sun Blade 6000 or 6048 Series Chassis documentation at:
  http://docs.sun.com/app/docs/prod/blade.srvr#hic

- Review the required installation tasks for properly installing and setting up the Sun Blade X6270 Server Module in the Sun Blade 6000 or 6048 Series Chassis documentation.

  For more information, see TABLE 1-4.

- If applicable, install the following optional server module components prior to installing the server module into the system chassis:
  - FEM, REM, DIMMs, and CPU

  For instructions, see Chapter 2.

- Use a grounded antistatic wrist strap or equivalent safety equipment to prevent electrostatic discharge (ESD) when you install the Sun Blade server module into the system chassis.

Caution – To protect electronic components from electrostatic damage, which can permanently disable the system or require repair by Sun service technicians, place components on an antistatic surface, such as an antistatic discharge mat, an antistatic bag, or a disposable antistatic mat. Wear an antistatic grounding strap connected to a metal surface on the chassis when you work on system components.

▼ Install Server Module Into a Powered-On Chassis

1. **Verify that the Sun Blade 6000 or 6048 Series Chassis is powered-on.**

   When the chassis is powered-on, the fans are operating and the OK/Power LED illuminates a STEADY ON green light. The OK/Power LED is located on both the front and rear panels of the chassis. If the chassis is not powered-on, refer to the system chassis documentation.

2. **In the front of the chassis, locate and remove the desired server module filler panel.**

   Pull the lever out and eject the filler panel.

Caution – If you are not installing a server module into a slot, do not remove the server module filler panel from the slot. The server module filler panel is required to meet FCC standards for electromagnetic interference (EMI).

3. **Position the server module vertically so that the ejectors are on the right and extend outward.**

   The following illustrations show the server module being inserted into the Sun Blade 6000 Modular System; your chassis might differ. See box 1 in FIGURE 3-1.

FIGURE 3-1 Inserting the Server Module Into the Chassis
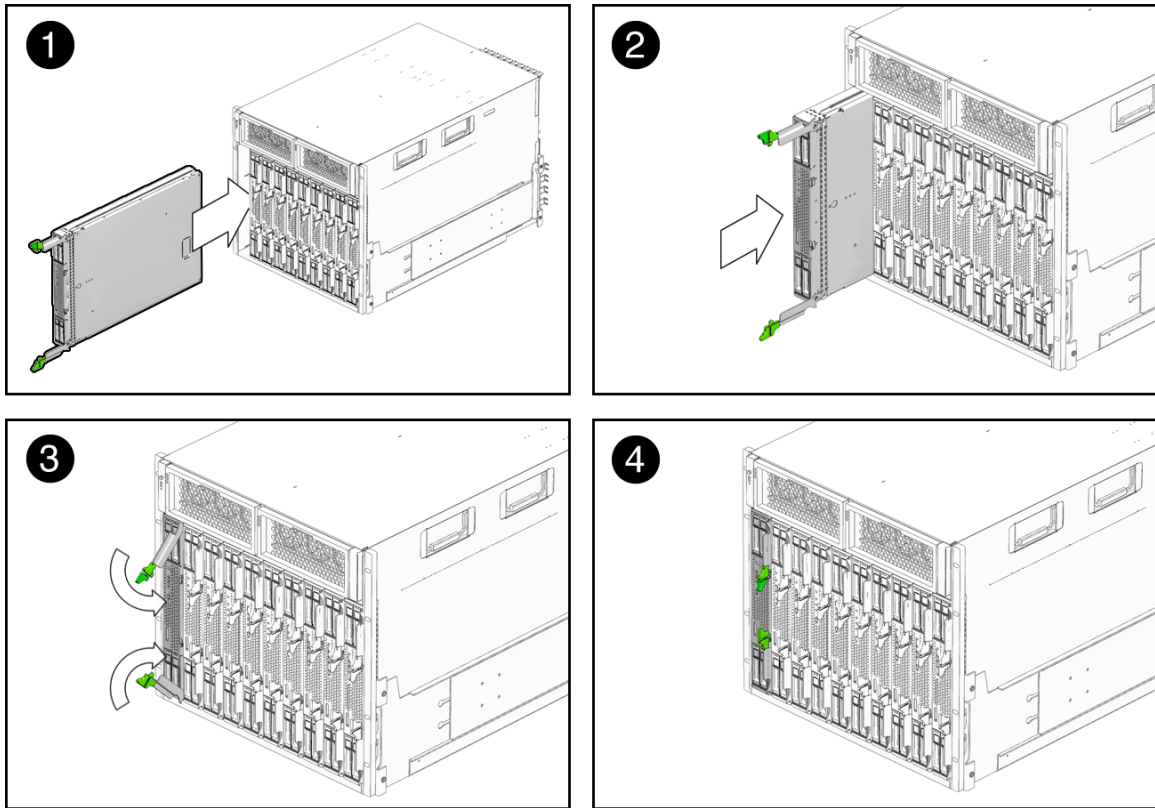
4. **Push the server module into the slot until the server module stops and is flush with the chassis.**

   See Boxes 2 and 3 in FIGURE 3-1.

5. **To lock the server module into the chassis, do the following:**

   - Rotate the top ejector down until it snaps into place. See Box 3 in FIGURE 3-1.

   - Rotate the bottom ejector up until it snaps into place. See Box 3 in FIGURE 3-1

   The server module is locked in the chassis (Box 4 FIGURE 3-1) and Standby power is applied to the server module SP.

FIGURE 3-2 Sun Blade X6270 Server Module Front Panel LEDs
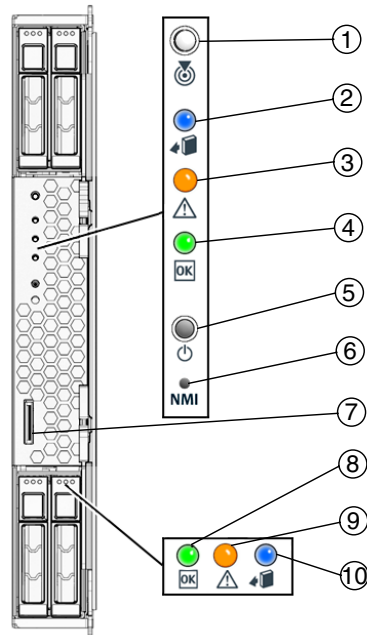
Figure Legend Server Module LEDs

1	Server Module Locate LED – White
2	Server Module Ready to Remove LED – Blue
3	Server Module Service Action Required LED – Amber
4	Server Module OK/Power LED – Green (blinking or solid state)
5	Server Module Power button/reset
6	Non-Maskable Interrupt (NMI) button (Service only)
7	Universal Connector Port (UCP), used for dongle cable

8	HDD OK Power LED – Green
9	HDD Service Action Required LED – Amber
10	HDD Ready to Remove LED – Blue

Powering On the Server Module

After installing a server module into a powered-on chassis, the server module SP automatically boots and standby power from the chassis power supplies is supplied directly to the server module SP. At this time, you can connect to Integrated Lights Out Manager (ILOM) and configure an IP address. However, to install an operating system or to fully operate the server module, you must apply main power to the server module host.

For more information about the Sun Blade X6270 Server Module power states, see the following topics:

- "Verify Standby Power State on Server" on page 38
- "Apply Main Power to Server SP and Host" on page 39
- "Power Off the Server" on page 40
- "Troubleshoot Server Power States" on page 40

▼ Verify Standby Power State on Server

1. **Verify that the system chassis is powered-on.**

   A steady-on green light should be visible from the chassis OK/Power LED.

   If the chassis is not powered on, refer to the system chassis documentation for instructions on powering on the system chassis.

2. **Ensure that the OK/Power LED on the server module illuminates a standby blink**.

   The OK/Power LED on the server module front panel illuminates a standby blink (0.1 second on, 2.9 seconds off). The standby blink indicates that the server module SP is active but the server module host is powered off.

Note – The OK/Power LED will be set to standby blink only when there is enough chassis power for the server module to power on. If there is not enough chassis power, the OK/Power LED will remain off until there is enough power for the server module to power on. To troubleshoot this issue, see "Troubleshoot Server Power States" on page 40.

At this time, standby power is supplied to the server module SP enabling you to connect to ILOM and configure an IP address. Note that main power to the server module host must be applied prior to installing an operating system.

▼ Apply Main Power to Server SP and Host

1. **Verify that the OK/Power LED on the front panel of the server module is in a standby blink state.**

   In standby power state, the OK/Power LED on the front panel of the server module illuminates a slow blink (0.1 second on, 2.9 seconds off).

Note – The server power state will not be set to standby if the CMM in the chassis is not present or accessible to the server SP. The OK/Power LED on the server will remain off. In this situation, you should proceed by powering on the server as instructed below.

2. **Use a non-conductive pointed object or stylus to press and release the recessed Power button on the server module front panel.**

   The OK/Power LED on the server module front panel illuminates a steady-on green light. The steady-on LED state indicates that the server module SP and host are both powered-on.

▼ Power Off the Server

● **To power off the server module from main power mode, use one of the following two methods:**

■ **Graceful shutdown –** Use a pointed object or stylus to press and release the Power button on the front panel.

This operation will cause any Advanced Configuration and Power Interface (ACPI) enabled operating system to perform an orderly shutdown of the operating system. Servers not running ACPI-enabled operating systems will shut down to standby power mode immediately.

■ **Emergency shutdown –** Press and hold the Power button for four seconds to force main power off and to enter standby power mode.

▼ Troubleshoot Server Power States

Each time a server module powers on in the Sun Blade 6000 or 6048 Series Chassis, it queries the CMM to ensure that there is enough power available from the power supply units (PSUs) to power on the server. If there is not enough power to power on the server module, the SP denies the server module from receiving power (standby and main). If this situation occurs, the OK/Power LED on the front panel of the server module will remain off. To troubleshoot this power issue, follow these guidelines:

1. Review the ILOM event log messages to determine whether the server module has permission to power on. An event message is recorded in the log any time there is inadequate amount of power available from the PSUs to power on the server module.

   For more information about the ILOM event log or monitoring power consumption, refer to the *Sun Integrated Lights Out Manager 2.0 User's Guide* (820-1188) or the *Sun Integrated Lights Out Manager 2.0 User's Guide* (see "Related Documentation" on page ix for part numbers.

2. Ensure that the system chassis has the proper amount of power supplies installed to support powering on all the chassis components that are currently installed.

   Refer to the system chassis documentation for information about the number of power supplies required to power on chassis components.

3. To avoid power loss, it is recommended that you use the *default* CMM power management settings for power supplies in ILOM.

   For more information about power management, refer to "Power Management Policy" in the *Sun ILOM 2.0 Supplement for X6270 Server Module* (820-6180).

Note – When powered-on permissions become available, the OK/Power LED on the front panel of the server module will illuminate a standby blink.

4. As needed, refer to the *Sun x64 Server Diagnostics Guide* (820-6750) for instructions on how to run the start-up diagnostic tools provided with the Sun Blade X6270 Server Module.

Attaching Devices to the Server Using a Dongle Cable

Your system chassis is shipped with a dongle cable that enables you to connect communication devices directly to the Sun Blade X6270 Server Module. The X6270 Server Module supports one of two types of dongle cables:

- 3-Cable Dongle II (P/N 530-3936 Option # 4622A). This cable provides a VGA connector, RJ-45 serial connector, and one dual USB connector.
- 4-Cable Dongle (P/N 530-3934 Option # 4621A). This cable provides a VGA connector, DB-9 serial connector, RJ-45 serial connector, and one dual USB connector.

Caution – The RJ-45 serial connector on the 4-Cable Dongle is not functional on the Sun Blade X6270 Server Module. To establish a local serial connection with the Sun Blade X6270 Server Module, use the RJ-45 serial connector that is available on the 3-Cable Dongle II or the DB-9 serial connector on the 4-Cable Dongle.

Note – The 3-Cable Dongle II is typically provided with each Sun Blade 6000 or 6048 Series Chassis. Additional cables can be ordered.

You can use the VGA or USB connectors on the dongle cable to communicate with the server module BIOS and operating system. Or, you can use the serial connector to communicate with the server module SP.

Note – Direct management of an individual server module is through the embedded server module SP, Sun Integrated Lights Out Manager (ILOM). Access to the server module SP is made through the serial port or the chassis monitoring module (CMM) management network. For more information about server-level management or chassis-level management in ILOM, see the system chassis documentation or the *Sun Integrated Lights Out Manager 2.0 User's Guide* or *Sun Integrated Lights Out Manager 3.0 Documentation Collection*.

Caution – You should use the dongle cable for configuration and service purposes. Disconnect the dongle cable from the server module after the configuration or service operation is complete to avoid damaging the cable.

▼ Attach Devices to Server Using the 3-Cable Dongle

1. **Insert the dongle cable into the universal connector port (UCP) on the server module front panel.**

   See FIGURE 3-3.

2. **Attach the connectors on the dongle cable to the appropriate devices.**

   See "Dongle Cable Connectors" on page 43.

FIGURE 3-3   Dongle Cable Connections
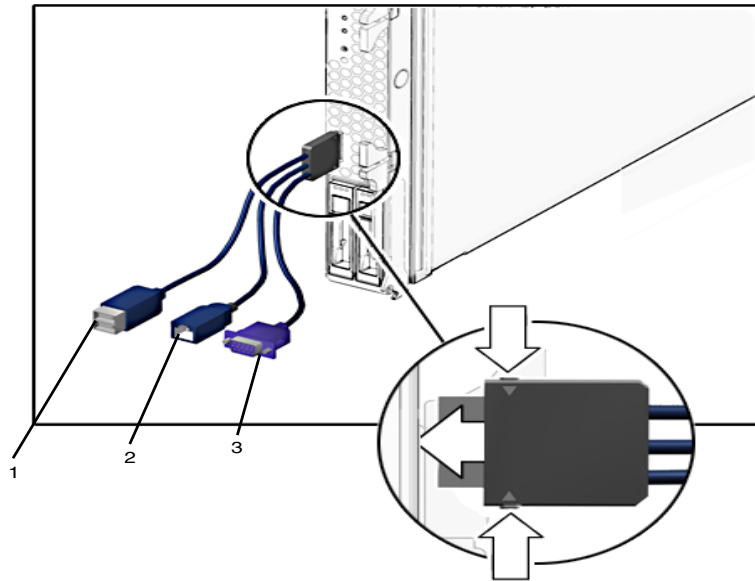
Figure Legend Dongle Cable Connectors

1	Dual USB 2.0 connectors
2	RJ-45 serial port connector
3	VGA video connector

Setting Up ILOM

This chapter describes how to access the Sun Integrated Lights Out Manager (ILOM) software and how to initially configure an IP address for the server module SP.

This chapter contains the following topics:

IP Configuration Task Checklist

TABLE 4-1 summarizes an ordered list of tasks that you must perform to initially configure an IP address for the server module SP.

TABLE 4-1   IP Address Configuration Tasks

Step	Requirement	Description
1	Install the server module into the chassis.	The server module must be properly installed in the chassis system. For more information, see Chapter 1 and Chapter 3 of this guide.
2	Establish a console connection to ILOM.	You can establish a connection with the ILOM server module SP through a local or remote console. • **Local serial console.** Using a dongle cable you can connect a serial console to the UCP port on the front panel of the server module. For instructions for attaching local devices to the server module, see "Attach Devices to Server Using the 3-Cable Dongle" on page 42. Alternatively, you can connect a serial console to the serial port on the rear panel of the CMM. For more information about attaching cables or devices to a CMM, see the system chassis documentation. • **Remote console**. Attach a local area Ethernet network cable to the network management port (RJ-45 NET MGT 0) on the CMM. The chassis Ethernet ports provide the most robust method of connecting to ILOM. This connection supports both the command-line interface and the web interface. For more information about how to attach the CMM management network cable, see system chassis documentation.
3	Obtain an Administrator user account.	To configure an IP address in ILOM, you must log in to ILOM with an Administrator account. A preconfigured Administrator account is shipped on each server module SP. The preconfigured Administrator account name is `root` and its password is `changme`. Since this preconfigured account cannot be deleted, it is highly recommended that you change the password after initial setup. This account offers built-in administrative privileges (read and write access) to all service processor features and commands. For more information about ILOMs user accounts, see the *Sun Integrated Lights Out Manager 2.0 User's Guide* or th*e Integrated Lights Out Manager 3.0 Documentation Collection.*

TABLE 4-1 IP Address Configuration Tasks *(Continued)*

Step	Requirement	Description
4	Log in to ILOM.	Follow instructions in this chapter to log in to ILOM. See "Logging In to ILOM" on page 47.
5	Configure an IP address.	Follow the instructions in this chapter to initially configure an IP address: see "Configuring an IP Address" on page 49.
6	If applicable, obtain additional information about ILOM.	For more information about configuring or modifying an IP address in ILOM, refer to the *Sun Integrated Lights Out Manager 2.0 User's Guide* or th*e Integrated Lights Out Manager 3.0 Documentation Collection*.

Logging In to ILOM

This section presents the following procedures:

- "Log In to ILOM Using a Serial Connection" on page 47
- "Log In to ILOM From an Ethernet Connection Using the CLI" on page 48

▼ Log In to ILOM Using a Serial Connection

1. **Verify that your serial console connection to the server module or CMM is secure and operational.**

2. **Ensure that the following serial communication settings are configured.**

   - 8N1: eight data bits, no parity, one stop bit
   - 9600 baud (default, can be set to any standard rate up to 57600)
   - Disable hardware flow control (CTS/RTS)

3. **Press Enter to establish a connection between your serial console and ILOM.**

   A login prompt to ILOM appears.

4. **Log in to the ILOM command-line interface (CLI) using an administrator account.**

Note – The default ILOM administrator account shipped with each server module SP and CMM is `root` and `changme`. If this default administrator account has since been changed, contact your system administrator for an ILOM user account with administrator privileges.

If you are logged in to ILOM on the CMM, you must navigate to the server module SP CLI by typing this command:

`-> ` **`start /CH/BL`*n*`/SP/cli`**

Where BL*n* represents the slot in which the server module is installed in the chassis.

5. **Proceed to** **.**

▼ Log In to ILOM From an Ethernet Connection Using the CLI

1. **Using a secure shell (SSH) session, log in to ILOM by specifying your administrator account user name and the IP address of the CMM or server SP.**

   For example:

   `ssh ` *username@ipaddress*

   or

   `ssh –l ` *username@ipaddress*

   The ILOM password prompt appears.

2. **Type a password for the administrator account.**

   For example:

```
$ ssh root@192.168.25.25
root@192.168.25.25's password:
Sun Integrated Lights Out Manager
Version 2.0.3.9
Copyright 2008 Sun Microsystems, Inc. All rights reserved.
Warning: password is set to factory default.
->changeme
```

> **Note –** The default ILOM administrator account shipped with each server module SP and CMM is `root` and `changme`. If this default administrator account has since been changed, contact your system administrator for an ILOM user account with administrator privileges.

If you are logged in to ILOM on the CMM, you must navigate to the server module SP CLI by typing this command:

-> **start /CH/BL***n***/SP/cli**

where BL*n* represents the slot in which the server module is installed in the chassis.

3. **Proceed to** "Configuring an IP Address" on page 49 **".**

Configuring an IP Address

You can choose to configure a static or a dynamic IP address. Refer to the following sections for instructions:

- "Configuring a DHCP Network" on page 49
- "Configuring a Static Network" on page 50

Configuring a DHCP Network

By default, the SP uses a Dynamic Host Configuration Protocol (DHCP) server for network configuration. If you choose to configure a dynamic IP address, refer to these sections:

- "IP Configuration Task Checklist" on page 46
- "Logging In to ILOM" on page 47
- "Use DHCP for SP Network Configuration" on page 49

▼ Use DHCP for SP Network Configuration

> **Note –** The following instructions assume that the system is in its factory-default configuration.

1. **Verify that your DHCP server is properly configured.**

2. **Verify that an Ethernet cable is connected to the Ethernet port (NET MGT) on the CMM.**

3. **If applicable, obtain the MAC address of the server module SP on the cover of the server module.**

4. **Log in to ILOM as described in any one these procedures:**

   - "Log In to ILOM Using a Serial Connection" on page 47
   - "Log In to ILOM From an Ethernet Connection Using the CLI" on page 48

5. **Perform one of the following methods to obtain the DHCP IP address assigned to the server module SP:**

   - **ILOM – CMM**

     To drill down from the CMM and view the dynamic IP address assigned for a particular server module, type:

     ```
     -> show /CH/BL0/SP/network
     ```

Note – Where BL0 represents the blade installed in slot BL0. To specify the target blade, you must specify the number of the slot in which the module is installed. Blade slots range from 0 to 9 on the Sun Blade 6000 Series Chassis and 0 to 11 on the Sun Blade 6048 Series Chassis.

   - **ILOM – Server SP**

     To view the dynamic IP address assigned to the server module, type:

     ```
     -> show /SP/network
     ```

Configuring a Static Network

If you are planning to assign a static IP address to a server SP or CMM, consult the following topics:

- "IP Configuration Task Checklist" on page 46
- "Logging In to ILOM" on page 47
- "Assign a Static IP Address to Server Module SP Using the CLI" on page 51

Note – You can assign IP addresses to the server by using the ILOM web interface or command-line interface (CLI). For instructions on how to assign an IP address using ILOM's web interface, see the *Sun Integrated Lights Out Manager 2.0 User's Guide* or th*e Integrated Lights Out Manager 3.0 Documentation Collection*.

▼ Assign a Static IP Address to Server Module SP Using the CLI

1. **Connect and log in to ILOM as described in one of these procedures:**

   - "Log In to ILOM Using a Serial Connection" on page 47
   - "Log In to ILOM From an Ethernet Connection Using the CLI" on page 48

2. **At the ILOM CLI prompt** (->), **type the following command to set the working directory:**

   ```
   -> cd /SP/network
   ```

3. **Type the following commands, using your own addresses in place of the examples below:**

   - To configure a static Ethernet configuration, type:

     ```
     -> cd /SP/network
     -> set pendingipaddress=IP address
     -> set pendingipnetmask=Netmask address
     -> set pendingipgateway=Gateway address
     -> set pendingipdiscovery=static
     -> set commitpending=true
     ```

   - To configure a dynamic Ethernet configuration, type:

     ```
     -> cd /SP/network
     -> set pendingipdiscovery=dhcp
     -> set commitpending=true
     ```

4. **To log out of ILOM, type:**

   ```
   -> exit
   ```

Configuring the Preinstalled Solaris 10 Operating System

This chapter explains the steps for configuring the Solaris™ 10 Operating System (OS) that is preinstalled on the hard disk drive (or solid state drive), if ordered. The preinstalled Solaris version is Solaris 10 10/09 or later.

Note – Unlike with SPARC® systems, you will *not* see the output of the preinstalled Solaris 10 image through a monitor when you power on the server. You will see the BIOS power-on self-test (POST) and other boot information output.

This chapter includes the following topics:

Before You Begin

Before you begin configuring the preinstalled Solaris 10 OS, do the following:

- Configure an IP address for the server SP. For details, see Chapter 4.
- Ensure that main power has been applied to the server module host. For more information, see "Powering On the Server Module" on page 38.
- Gather the information that you will need for the configuration, as listed in "Installation Worksheet" on page 54. Note that default values are indicated by an asterisk (*).

Note – To identify the MAC address for a server or other chassis components, see the Customer Information Sheet (shipped with the component), or inspect the printed MAC address label attached to the server or chassis component.

- The server ships with its console redirected to the *serial* port. You can choose an option to send the output to VGA (video port). For more information, see "(Optional) Redirect the Console Output to the Video Port" on page 60.

Installation Worksheet

Use the worksheet in TABLE 5-1 to gather the information that you need to configure the preinstalled Solaris 10 OS. You only need to collect the information that applies to your application of the system.

TABLE 5-1   Worksheet for Solaris 10 Configuration

Information for Installation		Description or Example	Your Answers: Defaults (*)
Language		Select from the list of available languages for the Solaris 10 software.	English*
Locale		Select your geographic region from the list of available locales.	
Terminal		Select the type of terminal that you are using from the list of available terminal types.	
Network connection		Is the system connected to a network?	• Networked • Non-networked*
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	• Yes • No*
If you are not using DHCP, note the network address:	IP address	If you are not using DHCP, supply the IP address for the system. Example: `129.200.9.1`	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: `255.255.0.0`	255.255.0.0*
	IPv6	Do you want to enable IPv6 on this machine?	• Yes • No*
Host name		The host name chosen for your system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather this information: Default realm: Administration server: First KDC: (Optional) Additional KDCs:	• Yes • No*

TABLE 5-1 Worksheet for Solaris 10 Configuration *(Continued)*

Information for Installation		Description or Example	Your Answers: Defaults (*)
Name service	Name service	If applicable, which name service should this system use?	• NIS+ • NIS • DNS • LDAP • None*
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server, or let the installation program find one?	• Specify One • Find One*
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of domains to search when a DNS query is made. Search domain: Search domain: Search domain:	
	LDAP	Provide the following information about your LDAP profile: Profile name: Profile server: If you specify a proxy credential level in your LDAP profile, gather the following information: Proxy-bind distinguished name: Proxy-bind password:	

TABLE 5-1 Worksheet for Solaris 10 Configuration *(Continued)*

Information for Installation	Description or Example	Your Answers: Defaults (*)
Default route	Do you want to specify a default route IP address, or let the Solaris installation program find one? The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network. You have the following choices: • You can specify the IP address. An `/etc/defaultrouter` file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route. • You can let the Solaris installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the Internet Control Message Protocol (ICMP) for router discovery. If you are using the command-line interface, the software detects an IP address when the system is booted. • You can select None if you do not have a router or do not want the software to detect an IP address at this time. The software automatically tries to detect an IP address on reboot.	• Specify One • Detect One • None*
Time zone	How do you want to specify your default time zone?	• Geographic region* • Offset from GM • Time zone file
Root password	Choose a root password for the system.	

Configure the Preinstalled Solaris 10 Operating System

Note – Before you perform this procedure, you need to set up the service processor. If you have not done so, see Chapter 4.

Use the information that you gathered in "Installation Worksheet" on page 54 as you perform the configuration.

After configuring ILOM, you can configure the preinstalled Solaris 10 Operating System (OS) by using the service processor to connect to the system console.

▼ Configure the Preinstalled Solaris 10 OS

1. **From the serial console, start a terminal session.**

   For example:

   ■ **On a serial console running Solaris:**

      Type the appropriate command to start a terminal session. For example, you can start a terminal session on a Solaris console by typing:

      ```
      $tip -9600 /dev/ttya
      ```

   ■ **On a client running Windows:**

      Open the appropriate program to start a terminal session. For example, you can start a terminal session on a Windows console by selecting:

      ```
      Start -> Programs -> Accessories -> Communications ->
      Hyperterminal
      ```

   ■ **On a client running Linux:**

      Type the appropriate command to start a terminal session. For example, to start a terminal session on a Linux console, you could launch Minicom.

      Minicom is a text-based serial communication program that is included in the Linux distributions. For more information, see the man pages included in the Linux distribution.

2. **Log in to ILOM using one of the methods described in** "Logging In to ILOM" on page 47.

   The ILOM CLI prompt appears.

3. **Verify that the communication properties of the service processor are set to the defaults.**

   For example:

```
-> show /SP/serial/host
/SP/serial/host
    Targets:

    Properties:
        commitpending = (Cannot show property)
        pendingspeed = 9600
        speed = 9600

    Commands:
        cd
        show
```

Note – If the speed is anything other than 9600, change it using this command:
```
-> set /SP/serial/host pendingspeed=9600 commitpending=true
```

---

4. **Start the serial console mode by entering the following:**

   ```
   -> start /SP/console
   ```

   Only accounts with Administrator privileges are enabled to configure the SP.

5. **When the following prompt appears, type y:**

   ```
   Are you sure you want to start /SP/console (y/n)? y
   ```

6. **Apply main power to the server by using a non-conductive pointed object or stylus to press the recessed Power button on the front panel.**

   For additional information about powering on your server, see "Powering On the Server Module" on page 38.

   POST messages appear on your screen as the OS boots up.

7. **Follow the Solaris 10 preinstallation on-screen prompts.**

8. **Use the information gathered in** "Installation Worksheet" on page 54 **to help you enter the system and network information as you are prompted.**

   The screens that are displayed will vary, depending on the method that you chose for assigning network information to the server (DHCP or static IP address).

   After you have entered the system configuration information, the server completes the boot process and displays the Solaris login prompt.

▼ (Optional) Redirect the Console Output to the Video Port

The server module's console is automatically directed to the serial port. GRUB, the open source boot loader, is the default boot loader in the Solaris OS for x86-based or x64-based systems. The boot loader is the first software program that runs after you power on a system.

1. **Use a cable to connect the serial port of the host server (either through the chassis SER MGT port or through a dongle cable's serial port) to the video port of the client system.**

2. **From the GRUB menu, you have the option of displaying the installation process to a VGA connection (video port). To display output to the video port, choose the following option:**

   ```
   Solaris 10 10/09 s10x_u8wos_u08a X86 - Graphics Adapter
   ```

Configuring X6270 Server Module RAID Drives

After you configure the Solaris OS, you might need to configure the RAID drives.

RAID Drive Overview

The Sun Blade X6270 Server Module has two optional RAID expansion module (REM) cards. You can access RAID configuration through the REM card BIOS. To access the LSI REM card BIOS, press CTRL-C during the system boot. To access the Sun StorageTek REM card BIOS, press CTRL-A during the system boot.

TABLE 5-2   Sun Blade X6270 REM Cards

REM Cards	Press for BIOS
Sun StorageTek	CTRL-A
LSI 3081E	CTRL-C

The server module has the preinstalled OS on hard disk drive 0 (HDD0). When the Solaris OS installation is complete, the option to upgrade your single-disk OS to a mirrored RAID solution is available.

The configuration procedure is different for each supported REM card. For example, a Sun StorageTek REM card has many more options for RAID configuration than does an LSI REM card. Configure the RAID depending on your needs as shown in TABLE 5-3.

Note – Configuring RAID for the Sun Blade X6270 Server Module is optional. By default, the Solaris preinstalled image is configured in a non-RAID configuration. If anything other than a basic mirror RAID is required, it is recommended that you perform a fresh install of the Solaris Operating System (or other OS) in the desired RAID configuration.

RAID Drive Options

TABLE 5-3 shows the RAID drive options.

TABLE 5-3   RAID Drive Options

REM Card	Drives Supported	RAID Configuration Supported	Drive Usage
Sun StorageTek	Seagate 73GB SAS Fujitsu 73GB SAS Seagate 146GB SAS Fujitsu 146GB SAS Hitachi 146GB SAS Fujitsu 200GB SATA	Volume – 1 disk	
		RAID 0 – stripe – 2 disk minimum	No redundancy
		RAID 1 – mirror – 2 disk minimum	50%
		RAID 1E – 3 drive minimum	50%
		RAID 5 – 3 drive minimum	67–94%
		RAID 5EE – 4 drive minimum	50–88%
		RAID 50 – 6 drive minimum	67–94%
		RAID 6 – 4 drive minimum	50–88%
		RAID 60 – 8 drive minimum	50–88%
		Spanned Volume – 2 drive minimum	100%
		RAID Volume – 4 drive minimum	50-100%
LSI 3081E	Seagate 73GB SAS Fujitsu 73GB SAS Seagate 146GB SAS Fujitsu 146GB SAS Hitachi 146GB SAS Fujitsu 200GB SATA	IM (Integrated Mirror array) – 2 disk minimum, plus up to 2 hot-spare disks	Data on Primary disk might be merged.
		IME (Integrated Mirror Enhanced array) – 3 to 8 disks including up to 2 hot-spare disks	All data will be deleted during creation.
		IS (Integrated Striping array) – 2 to 8 disks	All data will be deleted during creation.

Mirroring the Preinstalled Solaris OS With LSI RAID

If you choose the preinstalled Solaris OS and want to make the OS part of a RAID set, and if you are using the LSI REM card only, perform the following procedure to update the preinstalled Solaris OS to a mirrored RAID set. As noted in TABLE 5-3, only IM (Integrated Mirror) allows data on the primary hard disk drive (HDD) to be preserved or merged into an array of disks.

This procedure describes how to create a mirror image of the OS before or after the Solaris installation. In this scenario, the server module has two hard disk drives: HDD0 (with the OS) and HDD1 (which is blank).

▼ Create a Mirror Image of the Preinstalled Solaris OS With LSI RAID

To create a mirror image of the Solaris OS on HDD1:

1. **Power on your server module for the first time.**

2. **Press CTRL-C to access the LSI RAID Configuration Utility.**

3. **Select the REM card, then press Enter.**

4. **Choose RAID Properties.**

5. **Create an IM (Integrated Mirror) for the required disk configuration.**

6. **Select the hard disks to be used. Use the right arrow key to move the cursor to the RAID column, then press the space bar to include disks into RAID.**

7. **Because HDD0 contains data, select merge or delete:**
   - Choose **M** to merge data and start a sync operation.
   - Choose **D** to erase the preinstalled Solaris OS.

8. **Press C to create the RAID and start the sync operation.**

9. **Click Exit to save the configuration and close the menu.**

10. **Press Esc to exit the Configuration Utility.**

11. **Reboot the Solaris OS.**

Mirroring the Preinstalled Solaris OS with Sun StorageTek REM Card

The Sun StorageTek REM card enables you to choose from many RAID configurations. How you configure your system depends on your system requirements and the available hard disk drives in the system.

This procedure describes how to mirror the preinstalled Solaris OS. This is the better option, and all remaining disks (should there be more than two) are incorporated into a DATA RAID set using the available options as shown in TABLE 5-3.

You will need the *Sun Blade X6270 Server Module Tools & Drivers CD* to perform this procedure.

▼ Create a Mirror Image of the Preinstalled Solaris OS

Follow these steps to mirror your configured Solaris OS:

1. **Using your Solaris server, log in and start Xserver.**

   This graphical user interface is required for StorageTek Software Management.

2. **Make a new directory on your Solaris server, type:**

   mkdir /StorMan

3. **Insert the supplied Tools & Drivers CD, and copy the StorMan.dss application, located in the** /mount-point/RAIDmgmt/StorageTEK/Solaris **directory, to the new directory you created on your Solaris server, for example,** /StorMan**.**

4. **Change the permissions of the new directory and StorMan application, type:**

   chmod 777 StormMan.pkg

5. **Run the following command to install the application:**

   pkgadd -d StorMan.pkg

6. **Choose to install all components when prompted.**

7. **To run the application, type:**

   sh /opt/StorMan/StorMan.sh

   A split screen appears.

8. **Click the screen to activate the Managed Systems List.**

9. **Double-click the local machine (it is displayed by IP Address of the Primary ENET connection).**

   A prompt appears.

10. **At the prompt, log in as root, using the OS password that was assigned during Solaris installation.**

11. **Click the SUN STK RAID Controller.**

    All attached hard disk drives on Enclosure 0 and 1 appear.

    Note – HDD0 (OS) should be Enclosure 0 Logical Volume 1.

    ---

12. **To mirror the OS, right-click Logical Device 1 and choose Expand or Change Logical Device.**

13. **Choose the appropriate RAID option (in this example, RAID 1 for Mirror).**

14. **Choose a disk to mirror the OS with, from the physical disk list.**

    Select the hard disk drive that best fits your needs.

15. **After you select the drive, click Next, and then view the configuration summary.**

16. **Click Apply to start the mirroring process.**

    You can also click **Schedule** to perform the mirroring process at a later time.

17. **Another confirmation screen appears. Confirm to start the mirroring process.**

    The OS begins to mirror. Mirroring can take several hours, depending on the amount of data and the drive size.

Solaris 10 Operating System User Information

This section provides pointers to information about the Solaris 10 Operating System.

Solaris 10 User Documentation

You can access the various collections of the Solaris 10 OS user documentation at:

http://docs.sun.com/app/docs/prod/solaris.10

Solaris 10 OS Training

Sun provides flexible training options that accommodate your personal schedule and learning style. The training options include instructor-led, web-based online, CD-ROM, and Live Virtual Class. For Solaris 10 Training and Certification options at a glance, go to:

http://www.sun.com/training

Using the Solaris Installation Program

The documentation listed in this section provides instructions for using the Solaris installation program and is available at the following web site:

http://docs.sun.com/

Follow the instructions for *x86-based* systems, not *SPARC-based* systems. For more information, see the Solaris 10 Release and Installation Collection for the version of the Solaris 10 Operating System you have installed. This documentation is available at:

http://docs.sun.com/app/docs/prod/solaris.10

After you configure the preinstalled Solaris OS, the Solaris installation program reboots the system and prompts you to log in. The system displays the message of the day, indicating the preloaded software that comes with your system:

- Sun Java™ Enterprise System (Java ES)
- Sun Studio™ 11

Sun Java Enterprise System

Sun Java Enterprise System (Java ES) is a set of software components that provide services needed to support enterprise-strength applications distributed across a network or Internet environment.

Sun Studio 11

Sun Studio 11 includes high-performance, optimizing C, C++, and Fortran compilers for the Solaris OS on SPARC and x86/x64 platforms. It also includes command-line tools and a NetBeans-based Integrated Development Environment (IDE) for application performance analysis and debugging of mixed source language applications. The tools offer multi-platform support, compatible with gcc, Visual C++, C99, OpenMP, and Fortran 2003.

Reinstalling the Solaris Operating System

If you want to reinstall the Solaris OS or to install a different version of the Solaris OS, refer to the *Solaris 10 Installation Guide: Basic Installations* (820-0176).

Download Solaris Operating System

You can download software for the Solaris OS from the following sites:

- To download the Solaris 10 Operating System, go to:

  http://www.sun.com/software/solaris/get.jsp

- To download patches, go to:

  http://sunsolve.sun.com/pub-cgi/show.pl?target=home

Configuring the Preinstalled OpenSolaris Operating System

This chapter explains the steps for configuring the OpenSolaris™ Operating System (OS) that is preinstalled on the hard disk drive, if ordered. The preinstalled OpenSolaris version is OpenSolaris 2009.06 or later.

Note – Unlike with SPARC® systems, by default console output is redirected to the serial port. You will see the BIOS power-on self-test (POST) and other boot information output on the serial port.

This chapter includes the following topics:

Before You Begin

Before you begin configuring the preinstalled OpenSolaris OS, do the following:

- Configure an IP address for the server SP. For details, see "Configuring an IP Address" on page 49.
- Ensure that main power has been applied to the server. For more information, see "Powering On the Server Module" on page 38.
- Gather the information that you will need for the configuration, as listed in "Installation Worksheet" on page 70. Note that default values are indicated by an asterisk (*).

Note – To identify the MAC address for a server or other chassis components, see the Customer Information Sheet (shipped with the component), or inspect the printed MAC address label attached to the server or chassis component.

- The server ships with its console redirected to the *serial* port. You can choose an option to send the output to VGA (video port). For more information, see "(Optional) Redirect the Console Output to the Video Port" on page 77.

Installation Worksheet

Use the worksheet in TABLE 6-1 to gather the information that you need to configure the preinstalled OpenSolaris OS. You only need to collect the information that applies to your application of the system.

TABLE 6-1   Worksheet for OpenSolaris Configuration

Information for Installation		Description or Example	Your Answers: Defaults (*)
Language		Select from the list of available languages for the OpenSolaris software.	English*
Locale		Select your geographic region from the list of available locales.	
Terminal		Select the type of terminal that you are using from the list of available terminal types.	
Network connection		Is the system connected to a network?	• Networked • Non-networked*
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	• Yes • No*
If you are not using DHCP, note the network address:	IP address	If you are not using DHCP, supply the IP address for the system. Example: `129.200.9.1`	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: `255.255.0.0`	255.255.0.0*
	IPv6	Do you want to enable IPv6 on this machine?	• Yes • No*
Host name		Choose a host name for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather this information: Default realm: Administration server: First KDC: (Optional) Additional KDCs:	• Yes • No*

TABLE 6-1 Worksheet for OpenSolaris Configuration *(Continued)*

Information for Installation		Description or Example	Your Answers: Defaults (*)
Name service	Name service	If applicable, which name service should this system use?	• NIS+ • NIS • DNS • LDAP • None*
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server, or let the installation program find one?	• Specify One • Find One*
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of domains to search when a DNS query is made. Search domain: Search domain: Search domain:	
	LDAP	Provide the following information about your LDAP profile: Profile name: Profile server: If you specify a proxy credential level in your LDAP profile, gather the following information: Proxy-bind distinguished name: Proxy-bind password:	

TABLE 6-1   Worksheet for OpenSolaris Configuration *(Continued)*

Information for Installation	Description or Example	Your Answers: Defaults (*)
Default route	Do you want to specify a default route IP address, or let the OpenSolaris installation program find one? The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network. You have the following choices: • You can specify the IP address. An /etc/defaultrouter file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route. • You can let the OpenSolaris installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the Internet Control Message Protocol (ICMP) for router discovery. If you are using the command-line interface, the software detects an IP address when the system is booted. • You can select None if you do not have a router or do not want the software to detect an IP address at this time. The software automatically tries to detect an IP address on reboot.	• Specify One • Detect One • None*
Time zone	How do you want to specify your default time zone?	• Geographic region* • Offset from GM • Time zone file
Root password	Choose a root password for the system.	

Configuring the Preinstalled OpenSolaris Operating System

Note – Before you perform this procedure, you need to set up the service processor. If you have not done so, see "Setting Up ILOM" on page 45.

Use the information that you gathered in "Installation Worksheet" on page 70 as you perform the configuration.

After configuring the server ILOM service processor (SP), you can configure the preinstalled OpenSolaris Operating System (OS) over the network using Secure Shell (SSH) or locally using the SER MGT port to connect to the system console.

Configuration instructions, see the following topics:

- "Access the System Over the Network" on page 74
- "Access the System Locally" on page 75
- "Configure the Preinstalled OpenSolaris Operating System" on page 76
- "(Optional) Redirect the Console Output to the Video Port" on page 77

▼ Access the System Over the Network

1. **Log in to ILOM:**

   a. **In a networked terminal window, enter ssh root@<*IP_address*>**

      Where *<IP_address>* is internet address of the server in the format xxx.xxx.xxx.xxx.

   b. **At the password prompt, enter the default password `changeme`.**

      ILOM displays a default command prompt (- >), indicating that you have successfully logged in to ILOM.

2. **Verify that the communication properties of the service processor are set to the defaults.**

   For example:

```
-> show /SP/serial/host
/SP/serial/host
    Targets:

    Properties:
        commitpending = (Cannot show property)
        pendingspeed = 9600
        speed = 9600

    Commands:
       cd
       show
```

Note – If the speed is anything other than 9600, change it using this command:
`-> ` **`set /SP/serial/host pendingspeed=9600 commitpending=true`**

---

3. **Start the serial console mode by entering the following:**

   `-> ` **`start /SP/console`**

   Only accounts with Administrator privileges are enabled to configure the SP.

4. **When the following prompt appears, type y:**

   `Are you sure you want to start /SP/console (y/n)? ` **`y`**

▼ Access the System Locally

1. **Use a cable to connect the SER MGT port of the host server to the serial port of the client system.**

2. **To access the system console, start a terminal session using one of the following methods:**

   ■ **From an OpenSolaris client:**

   Type the appropriate command to start a terminal session. For example, you can start a terminal session on a OpenSolaris console by typing:

   `$tip -9600 /dev/ttya`

   ■ **From a Windows client:**

   Open the appropriate program to start a terminal session. For example, you can start a terminal session on a Windows console by selecting:

```
Start -> Programs -> Accessories -> Communications ->
Hyperterminal
```

- **From a Linux client:**

  Type the appropriate command to start a terminal session. For example, to start a terminal session on a Linux console, you could launch Minicom.

  Minicom is a text-based serial communication program that is included in the Linux distributions. For more information, see the man pages included in the Linux distribution.

3. **Press Enter on the terminal device to establish a connection between the terminal device and the ILOM SP.**

   ILOM displays a login prompt, after a short wait.

   ```
   login:
   ```

Note – If you connect to the serial port on the server before the ILOM SP has been powered on or during its power-on sequence, SP boot messages might be displayed prior to the login prompt.

---

4. **Type the default user name and password to log in to the ILOM SP.**

   Username: **root**

   Password: **changeme**

   ILOM displays a default command prompt (- >), indicating that you have successfully logged in to ILOM.

▼ Configure the Preinstalled OpenSolaris Operating System

1. **Apply main power to the server by using a nonconductive pointed object or stylus to press the recessed Power button on the front panel.**

   For additional information about powering on your server, see "Powering On the Server Module" on page 38.

   POST messages appear on your screen as the OS boots up.

2. **Follow the OpenSolaris preinstallation on-screen prompts.**

3. **Use the information gathered in** "Installation Worksheet" on page 70 **to help you enter the system and network information as you are prompted.**

   The screens that are displayed will vary, depending on the method that you chose for assigning network information to the server (DHCP or static IP address).
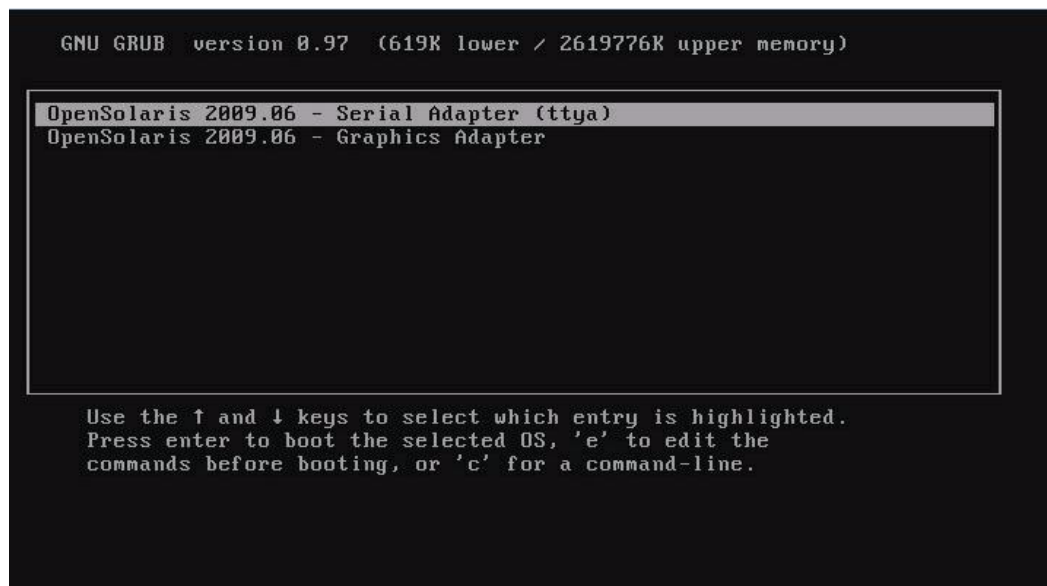
   After you have entered the system configuration information, the server completes the boot process and displays the OpenSolaris login prompt.

▼ (Optional) Redirect the Console Output to the Video Port

GRUB, the open source boot loader, is the default boot loader in the OpenSolaris OS for x86-based or x64-based systems. The boot loader is the first software program that runs after you power on a system.

1. **Connect to the server over the network or locally as described in these procedures:**

   - "Access the System Over the Network" on page 74
   - "Access the System Locally" on page 75

2. **From the GRUB menu, you have the option of displaying the installation process to a ttya connection (Serial Port) or a VGA connection (video port) (see** FIGURE 6-1**).**

FIGURE 6-1 OpenSolaris GRUB Menu Screen


```
 GNU GRUB   version 0.97   (619K lower / 2619776K upper memory)

┌──────────────────────────────────────────────────────────────────────┐
│ OpenSolaris 2009.06 - Serial Adapter (ttya)                            │
│ OpenSolaris 2009.06 - Graphics Adapter                                 │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
└──────────────────────────────────────────────────────────────────────┘

     Use the ↑ and ↓ keys to select which entry is highlighted.
     Press enter to boot the selected OS, 'e' to edit the
     commands before booting, or 'c' for a command-line.
```

3. **To display output to the video port, choose this option:**

   ```
   OpenSolaris 2009.06 - Graphics Adapter
   ```

Modify the GRUB Menu to Autoboot (Optional)

The grub menu on the preinstall image has been configured for an infinite timeout so that the you may choose the console output on powerup. You may wish to modify this configuration so that your system boots automatically.

■ To modify the GRUB menu to auto boot, edit the `/rpool/boot/grub/menu.1st` file as follows:

   a. **Change the -1 value on the timeout line to reflect the duration you want the menu to be presented. For example, for a 10-second delay, change the timeout value to 10 .**

   b. **Add a line that specifies the default boot entry. For example, to specify the first entry, add default 0.**

Getting Started on OpenSolaris

For information on getting started on OpenSolaris, click the Start Here icon on the OpenSolaris Desktop (see FIGURE 6-2).

FIGURE 6-2 OpenSolaris Desktop

Configuring Server RAID Drives

After you configure the OpenSolaris OS, you might need to configure the RAID drives.

RAID Drive Overview

The Sun Blade X6270 Server Module Servers have two optional host bus adapter (HBA) cards. You can access RAID configuration through the HBA card BIOS. To access the LSI HBA card BIOS, press CTRL-C during the system boot. To access the Sun StorageTek HBA card BIOS, press CTRL-A during the system boot.

TABLE 6-2 Sun Blade X6270 Server Module HBA Cards

HBA Cards	Press for BIOS
Sun StorageTek	CTRL-A
LSI 3081E	CTRL-C

The server has the preinstalled OS on hard disk drive 0 (HDD0). When the OpenSolaris OS installation is complete, the option to upgrade your single-disk OS to a mirrored RAID solution is available.

The configuration procedure is different for each supported HBA card. For example, a Sun StorageTek HBA card has many more options for RAID configuration than does an LSI HBA card. Configure the RAID depending on your needs as shown in TABLE 6-3.

Note – Configuring RAID for the server is optional. By default the OpenSolaris preinstalled image is configured in a non-RAID configuration. If anything other than a basic mirror RAID is required, it is recommended that you perform a fresh install of the OpenSolaris Operating System (or other OS) in the desired RAID configuration.

RAID Drive Options

TABLE 6-3 lists the RAID drive options.

TABLE 6-3 RAID Drive Options

HBA Card	Drives Supported	RAID Configuration Supported	Drive Usage
Sun StorageTek	Seagate 73GB SAS Fujitsu 73GB SAS Seagate 146GB SAS Fujitsu 146GB SAS Hitachi 146GB SAS Fujitsu 200GB SATA	Volume – 1 disk	
		RAID 0 – stripe – 2 disk minimum	No redundancy
		RAID 1 – mirror – 2 disk minimum	50%
		RAID 1E – 3 drive minimum	50%
		RAID 5 – 3 drive minimum	67–94%
		RAID 5EE – 4 drive minimum	50–88%
		RAID 50 – 6 drive minimum	67–94%
		RAID 6 – 4 drive minimum	50–88%
		RAID 60 – 8 drive minimum	50–88%
		Spanned Volume – 2 drive minimum	100%
		RAID Volume – 4 drive minimum	50-100%
LSI 3081E	Seagate 73GB SAS Fujitsu 73GB SAS Seagate 146GB SAS Fujitsu 146GB SAS Hitachi 146GB SAS Fujitsu 200GB SATA	IM (Integrated Mirror array) – 2 disk minimum, plus up to 2 hot-spare disks	Data on Primary disk might be merged.
		IME (Integrated Mirror Enhanced array) – 3 to 8 disks including up to 2 hot-spare disks	All data will be deleted during creation.
		IS (Integrated Striping array) – 2 to 8 disks	All data will be deleted during creation.

Mirroring the Preinstalled OpenSolaris OS With LSI RAID

The OpenSolaris OS supports hardware RAID and cannot be installed on an existing array if one has been created.

If you choose the preinstalled OpenSolaris OS and want to make the OS part of a RAID set, and if you are using the LSI HBA card only, perform the following procedure to update the preinstalled OpenSolaris OS to a mirrored RAID set. As noted in TABLE 6-3, only IM (Integrated Mirror) allows data on the primary hard disk drive (HDD) to be preserved or merged into an array of disks.

This procedure describes how to create a mirror image of the OS before or after the OpenSolaris installation. When the server has two or more hard disk drives, the OpenSolaris OS is preinstalled on HDD0. You can mirror the OpenSolaris OS to any of the other hard disk drives.

▼ Create a Mirror Image of the Preinstalled OpenSolaris OS With LSI RAID

To create a mirror image of the OpenSolaris OS on HDD1:

1. **Power on your server for the first time.**

2. **Press CTRL-C to access the LSI RAID Configuration utility.**

3. **Select the HBA card, then press Enter.**

4. **Choose RAID Properties.**

5. **Create an IM (Integrated Mirror) for the required disk configuration.**

6. **Select the hard disks to be used. Use the right arrow key to move the cursor to the RAID column, then press the space bar to include disks into the RAID.**

7. **Because HDD0 contains data, select merge or delete:**
   - Choose **M** to merge data and start a sync operation.
   - Choose **D** to erase the preinstalled OpenSolaris OS.

8. **Press C to create the RAID and start the sync operation.**

9. **Click Exit to save the configuration and close the menu.**

10. **Press Esc to exit the Configuration utility.**

11. **Reboot the OpenSolaris OS.**

Mirroring the Preinstalled OpenSolaris OS With Sun StorageTek HBA Card

The Sun StorageTek host bus adapter (HBA) card enables you to choose from many RAID configurations. How you configure your system depends on your system requirements and the available hard disk drives in the system.

This procedure describes how to mirror the preinstalled OpenSolaris OS. This is the better option, and all remaining disks (should there be more than two) are incorporated into a DATA RAID set using the available options as shown in TABLE 6-3.

You will need the Sun Blade X6270 Server Module Tools & Drivers CD.

▼ Create a Mirror Image of the Preinstalled OpenSolaris OS With Sun StorageTek HBA Card

Follow these steps to mirror your configured OpenSolaris OS:

1. **Using your OpenSolaris server, log in and start Xserver.**

   This graphical user interface is required for StorageTek Software Management.

2. **Make a new directory on your OpenSolaris server, type:**

   `mkdir /StorMan`

3. **Insert the supplied Tools & Drivers CD, and copy the StorMan.dss application, located in the** `/mount-point/RAIDmgmt/StorageTEK/OpenSolaris` **directory, to the new directory you created on your OpenSolaris server, for example,** `/StorMan`**.**

4. **Change the permissions of the new directory and StorMan application, type:**

   `chmod 777 StormMan.pkg`

5. **Run the following command to install the application, type:**

   `pkgadd -d StorMan.pkg`

6. **Choose to install all components when prompted.**

7. **To run the application, type:**

    sh /opt/StorMan/StorMan.sh

    A split screen appears.

8. **Click the screen to activate the Managed Systems List.**

9. **Double-click the local machine (it is displayed by IP Address of the Primary ENET connection).**

    A prompt appears.

10. **At the prompt, log in as root, using the OS password that was assigned during OpenSolaris installation.**

11. **Click the SUN STK RAID Controller.**

    All attached hard disk drives on Enclosure 0 and 1 appear.

    Note – HDD0 (OS installed) should be Enclosure 0 Logical Volume 1.

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12. **To mirror the OS, right-click Logical Device 1 and choose Expand or Change Logical Device.**

13. **Choose the appropriate RAID option (in this example, RAID 1 for Mirror).**

14. **Choose a disk to mirror the OS with, from the physical disk list.**

    Select the hard disk drive that best fits your needs.

15. **After you select the hard disk drive, click Next, and then view the configuration summary.**

16. **Click Apply to start the mirroring process.**

    You can also click **Schedule** to perform the mirroring process at a later time.

17. **Another confirmation screen appears. Confirm to start the mirroring process.**

    The OS begins to mirror. Mirroring can take several hours, depending on the amount of data and the hard disk drive size.

OpenSolaris Operating System User Information

This section provides pointers to information about the OpenSolaris Operating System.

- OpenSolaris User Documentation–You can access the various collections of the OpenSolaris OS user documentation at:
  http://opensolaris.org/os/documentation/
- OpenSolaris Training–For OpenSolaris training options, go to:
  http://www.opensolaris.com/learn/subscriptions/

Using the OpenSolaris Installation Program

You can find instructions for using the OpenSolaris installation program at the following web site:

http://dlc.sun.com/osol/docs/content/2009.06/getstart/index.html

After you configure the preinstalled OpenSolaris OS, the OpenSolaris installation program reboots the system and prompts you to log in.

Reinstalling the OpenSolaris Operating System

If you want to reinstall the OpenSolaris OS or install a different version of the OpenSolaris OS, refer to *Getting Started With OpenSolaris 2009.06* at:

http://dlc.sun.com/osol/docs/content/2009.06/getstart/

Download OpenSolaris Operating System

You can download software for the OpenSolaris OS from the following sites:

To download the OpenSolaris operating system, go to:
http://opensolaris.org/os/TryOpenSolaris/

To download support repository updates (SRUs), which contain the latest released
bug fixes for the OpenSolaris OS, go to:
http://sunsolve.sun.com/show.do?target=opensolaris

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